

B.E 6th Sem
INFORMATION SYSTEM
(Sub Code : 06IS65)

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UNITS COVERED

Unit 1,4,5 ,6 & 7

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BMSCE

INFORMATION SYSTEM

An IS is a combination of people, h/w, s/w, CN & data resources that stores, retrieves, transforms & disseminates information in an organisation.

INFORMATION TECHNOLOGY

IS & IT are different.

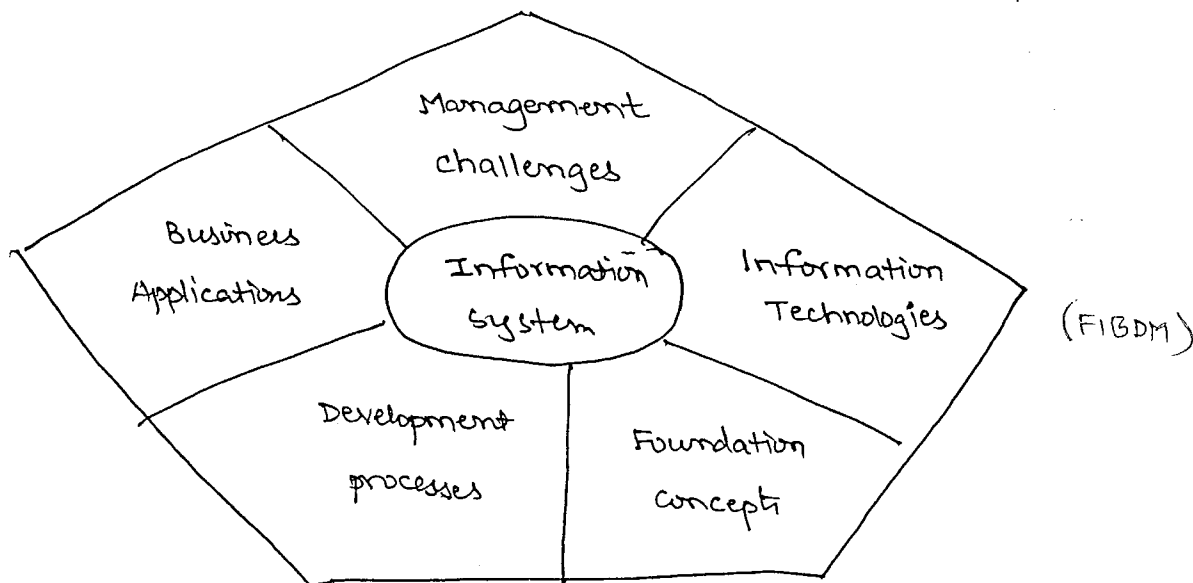
IT refers to hardware component necessary for system to operate.

Computer based IS's use the following IT

- (i) Computer H/W Technologies
 - (ii) Computer S/W Technologies
 - (iii) Telecommunications H/W Technologies
 - (iv) Data resource Mgmt Technologies
- } self explanatory

IS Framework for Business Professionals

* The fig below gives IS framework for Business professionals. The following 5 areas of IS knowledge are very important



(i) Foundation concepts

Fundamental behavioural, technical, business & managerial concepts abt the components & roles of IS.

Eg: Basic IS concept derived from general system theory.

(ii) Information Technologies :

Major Concepts, development + mgmt issues of IT - s/w, h/w, v/w, data mgmt & internet based technologies.

(iii) Business Applications:

Major uses of IS for operations, mgmt & competitive adv of a business.

Eg: Use of IS in marketing, accounting, manufacturing, CRM, ERP.

(iv) Development processes :

How business professionals & Information specialists plan develop & implement IS.

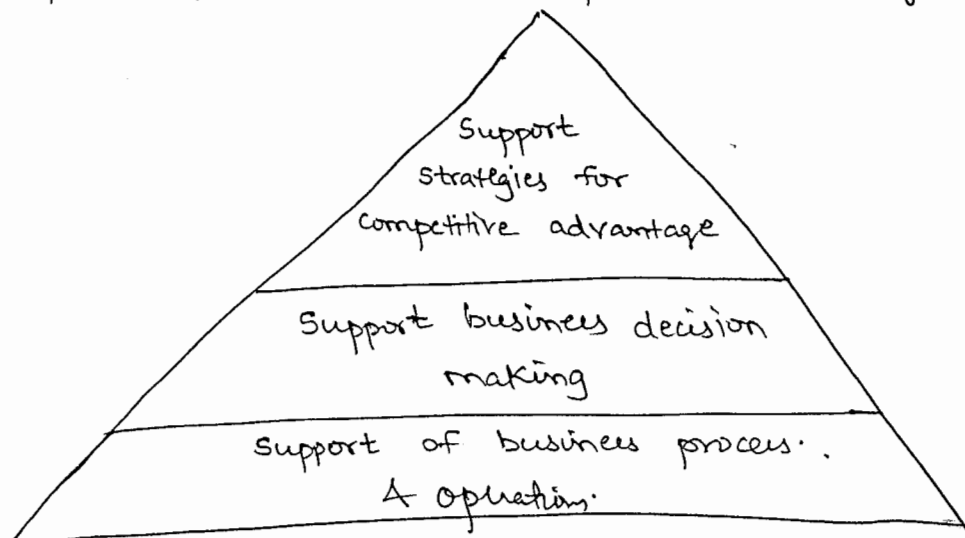
(v) Management challenges:

Challenges of effectively & ethically managing IT at the end user.

FUNDAMENTAL ROLES OF IS IN BUSINESS

There are 3 fundamental roles of IS in Business enterprise.

- (i) Support of business process & operations
- (ii) support of decision making by its employees & managers.
- (iii) Support of strategies for competitive advantage



The major roles of IS

- (i) Support business process & operation.

As a customer, you regularly require the IS that

(ii) Support decision making :

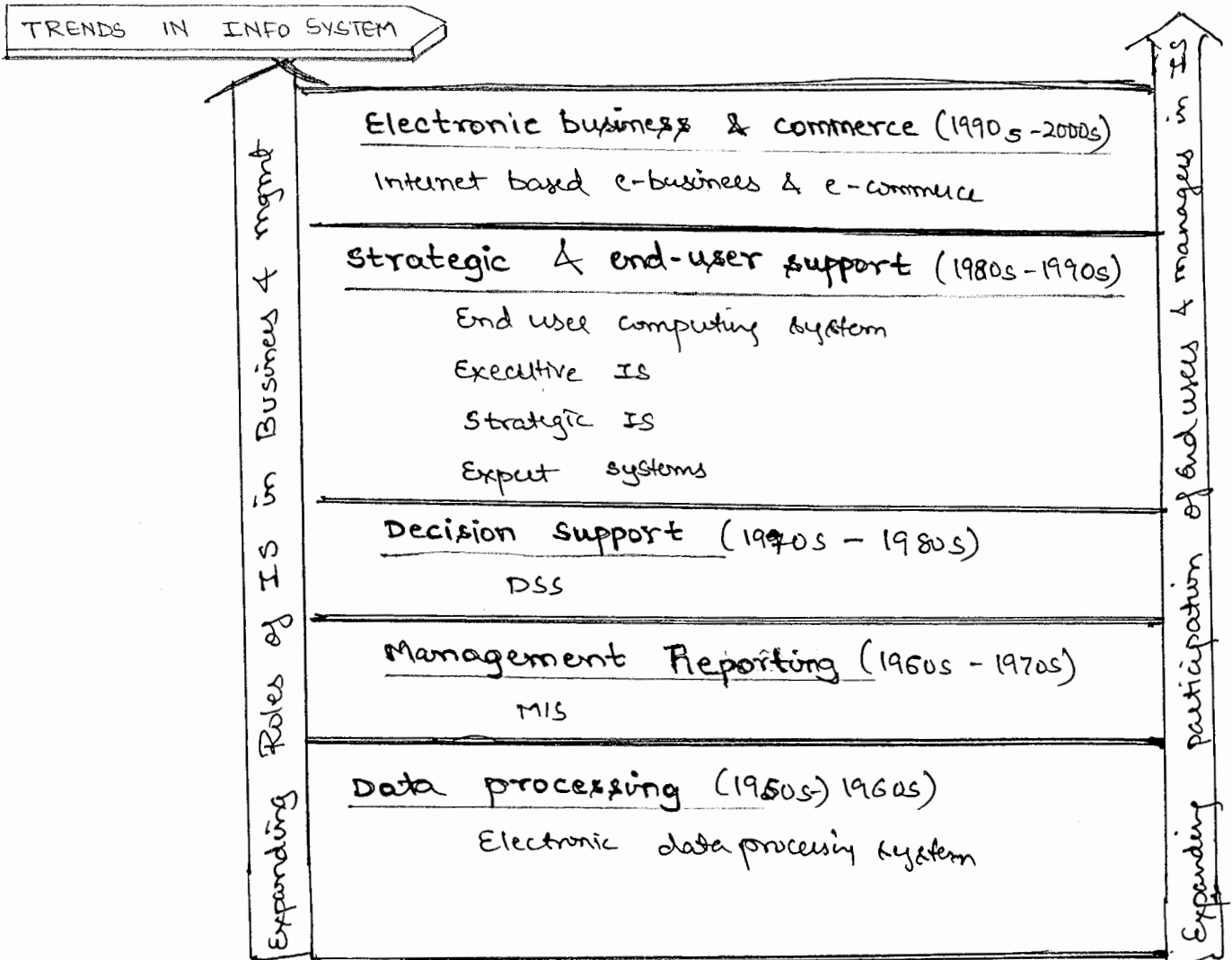
IS help business professionals make better decision

[Write ME subject points also]

(iii) Support competitive advantage :

Gaining adv over competitors requires innovative applications of I.T.

[Write some points on present competition in the world]



ROLE OF e-BUSINESS IN BUSINESS

Many businesses today use INTERNET technologies.

e-business use INTERNET tech to work & empower business processes.

e-business is an online exchange of value.

Companies rely on e-business applⁿ to

- (i) re-engineer business processes
- (ii) Implement e-commerce systems with their customers & suppliers
- (iii) promote enterprise collaboration among business teams & workgroups.

Enterprise collaboration system

* Use s/w tool to support communication, co-ordination, & collaboration among the members of networked team & workgroup.

* It may use internet, intranet & extranet

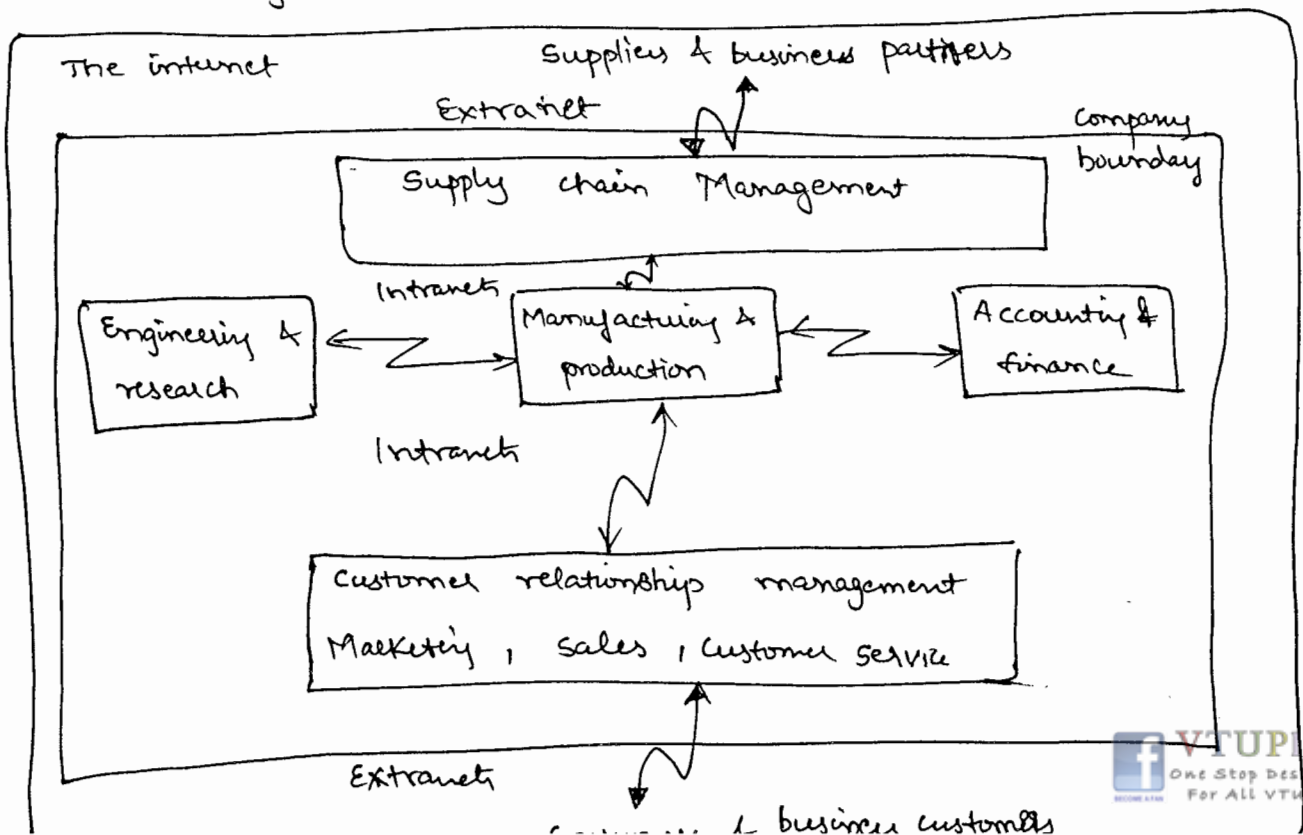
For eg: Employees may form virtual team that uses internet for video-conferencing, email etc.

Electronic commerce

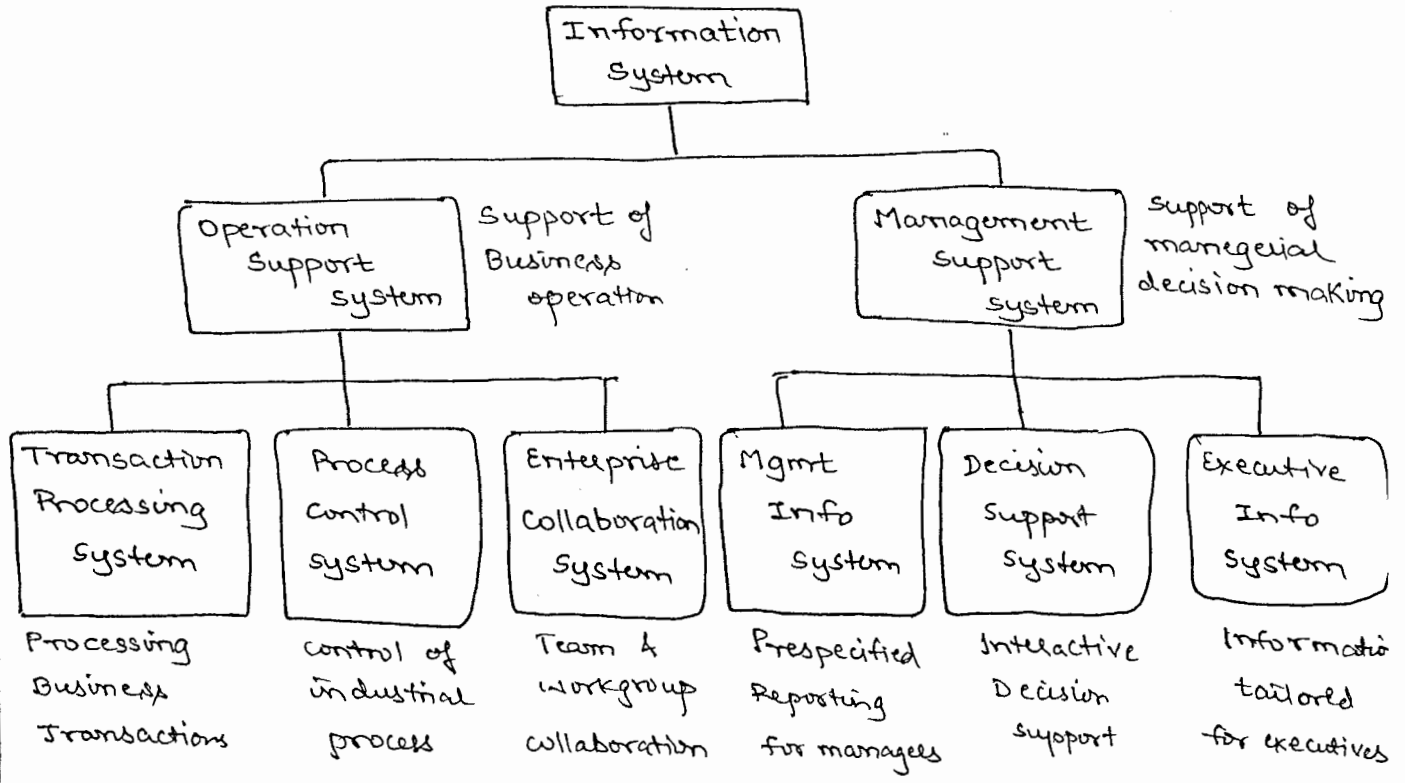
* e-commerce is buying & selling, marketing & servicing of products.

* Business use internet, intranet, extranet & other s/w that helps advertising, sales & customer support on www, internet security etc.

Eg: e-commerce use websites for online sales.



TYPES OF INFORMATION SYSTEM



Operation Support System.

(i) Transaction processing system:

It is an imp't example of operating support system that record & process data resulting from business transactions.

- They process transaction in 2 basic ways.
- Batch processing
- Real Time processing.

(ii) Process control system

* They **MONITOR & CONTROL** physical processes.

(iii) Enterprise collaboration system

* It enhance team & workgroup communications & productivity, & include applications that are often called office automation system.

[Also include the points of previous topic]

Management Support System

(i) Mgmt Information System (MIS)

↳ Provide information in the form of reports & displays to managers & business professionals.

(ii) Decision Support System (DSS)

↳ They give direct computer support to managers during the decision-making process.

(iii) Executive Information System (EIS)

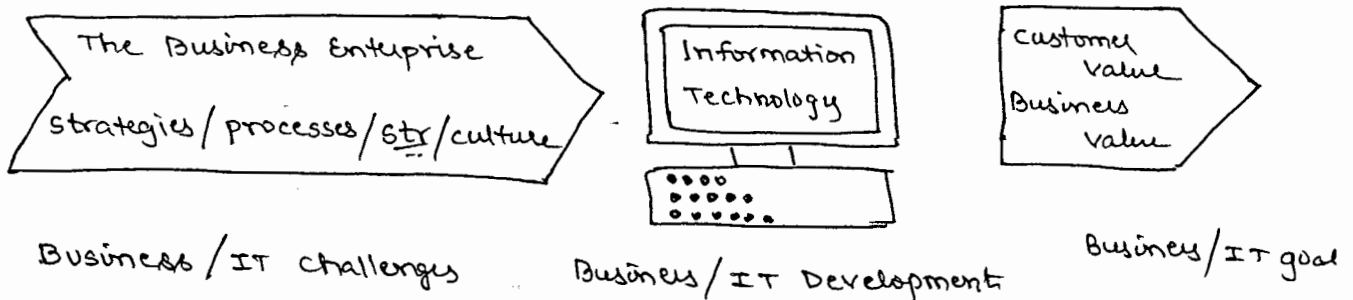
↳ Provide critical information from internal & external sources to executives & managers.

OTHER CATEGORIES OF INFO SYSTEM

- Expert System :- provide expert advise
- Knowledge Mgmt System :- Support creation, organisation, dissemination of business knowledge
- Strategic info system :- strategic products, services, & competitive adv
- Functional business system :- support operational & managerial applications.

MANAGERIAL CHALLENGES OF IT

* Fig below shows challenges & opportunities that business managers face in managing IS to meet goals.

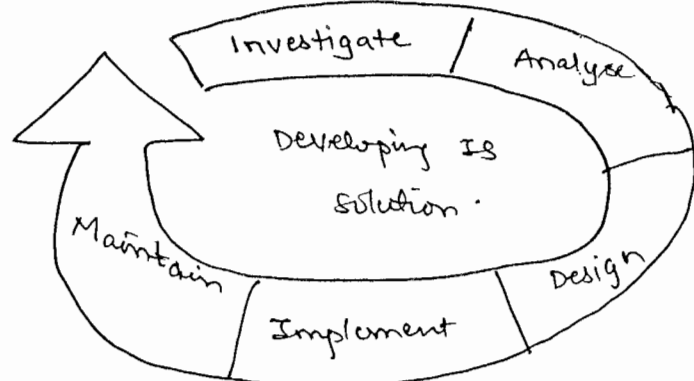


(i) Success & failure with IT

* Success of IS is measured by efficiency in terms of minimising cost, time, & use of information resources.

(ii) Developing IS solutions

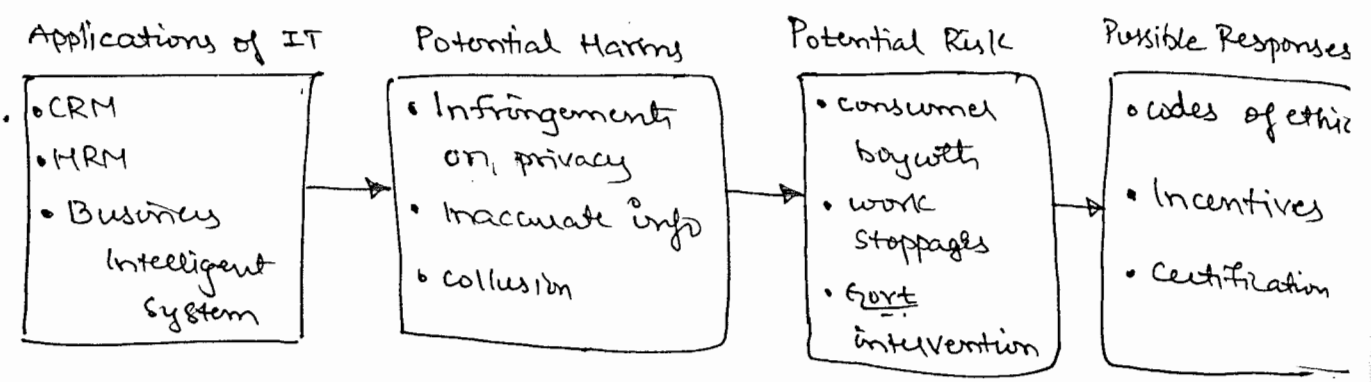
* Fig below show



Self explanatory on fig

(iii) challenges of ethics

Eg of ethical challenges faced by business managers who take supports of IT.



(iv) challenges of IT careers

- * Both IS & IT have created interesting, challenging, & career opportunities for men & women over the globe.
- * Employment opportunities are increasing each day as organisation expand their use of IT.
- * Using IT need IS professionals like system analyst, s/w developes & m/w managers.

(v) The IS Functions.

The IS function represent

- (1) Functions of accounting, finance, marketing and HRM
- (2) An impt contribute to operational efficiency, employee productivity & morale, & customer service & satisfaction.
- (3) A major source of information & support to promote business decision making.
- (4) Developing competitive products & services
- (5) Dynamic, rewarding & challenging

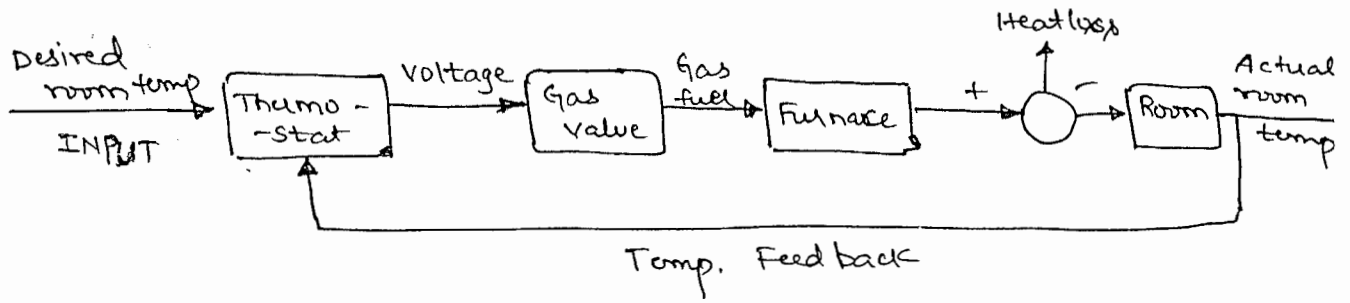
System Concepts

- * A **System** is a set of interrelated components, with a clearly defined boundary, working together to achieve a common set of objectives.
- * System concepts help you understand.
 - (1) **Technology** : use of variety of h/w, s/w, data mgmt, and telecommunications n/w technology.
 - (2) **Applications** : e-business & e-commerce involve business info system.
 - (3) **Development** : use of IT in business
 - (4) **Management** : Managing information technology.
- * A system has 3 basic interacting components like
 - (1) **Input** : Involves capturing & assembling elements that enter the system to be processed.
Eg: Raw material, energy, data & human effort
 - (2) **Processing** : Involves converting INPUT to OUTPUT.
Eg: Manufacturing process, human breathing process.
 - (3) **Output** : Involves transferring the elements that have been processed.
Eg: Finished products, human services etc.
- * A system concept become even more useful by including 2 additional components :
 - (1) **feedback** and
 - (2) **control**

Feedback is data abt performance of system.

Controlling involves monitoring & evaluating feedback to check whether a system is moving towards the achievement of goal.

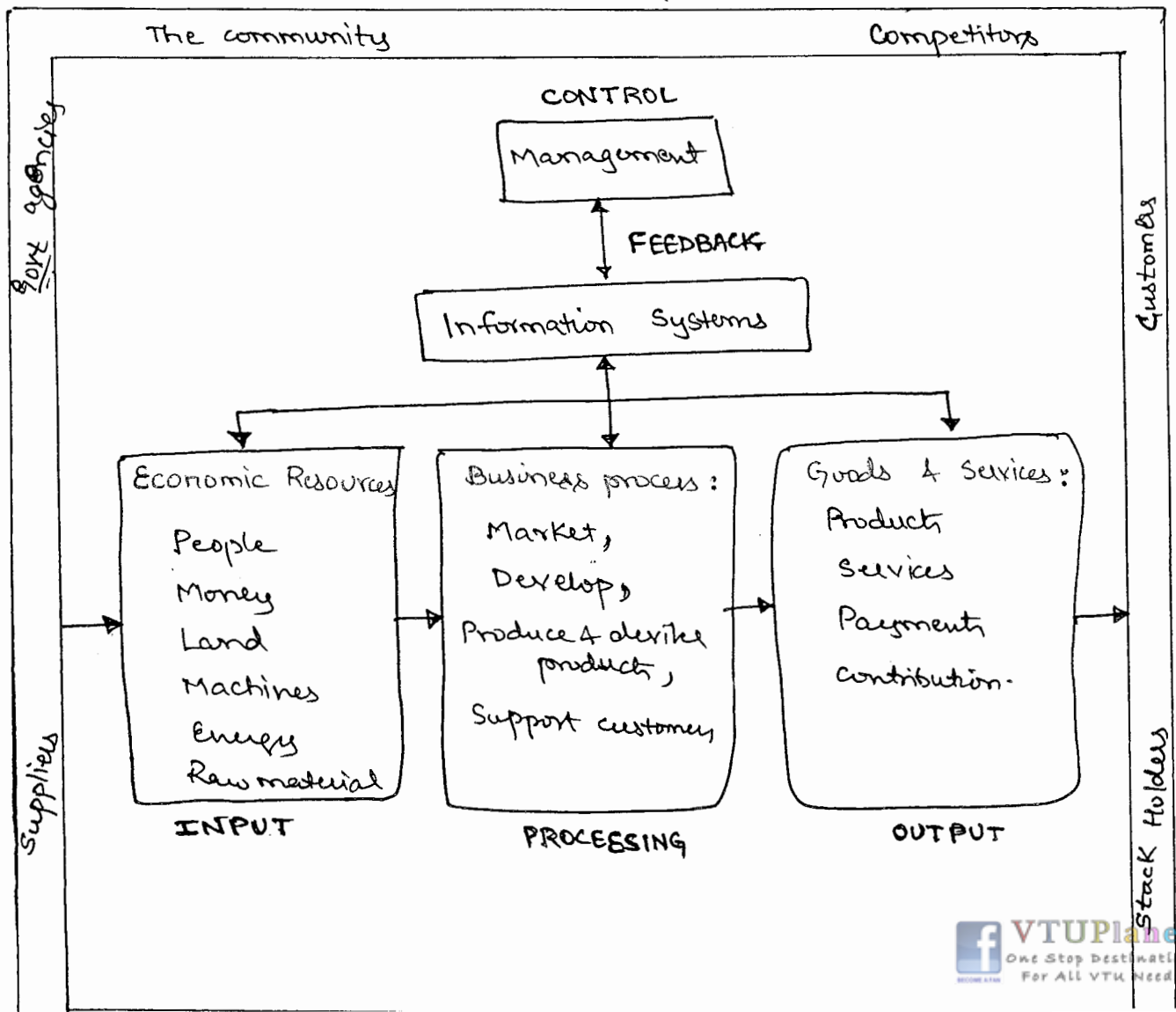
Eg: for cybernetic system is a home temp control system



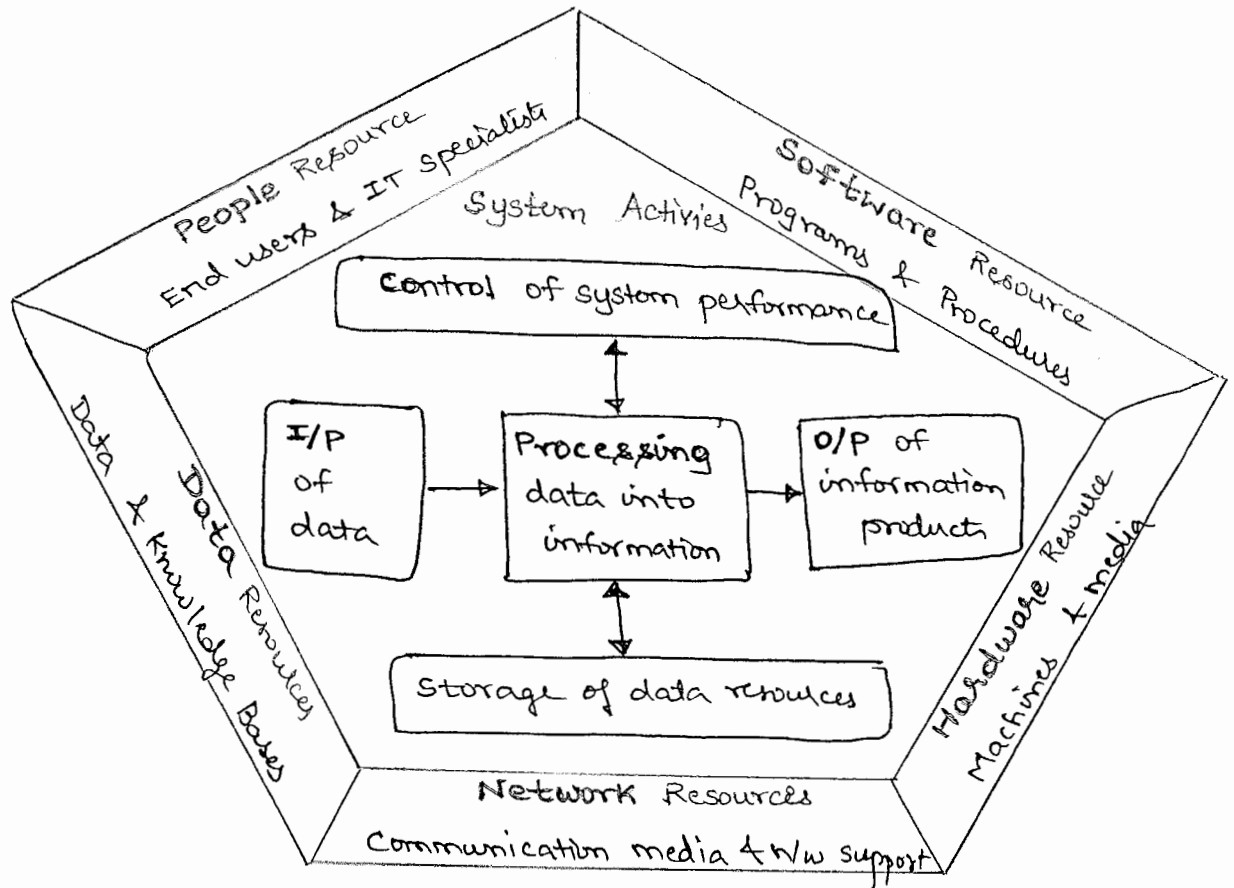
* A system exists in an environment. If a system is one of the components of a larger system, it is a subsystem, & the larger system is its environment.

* Fig: A business is an organisational system that shows system components like INPUT, PROCESSING, OUTPUT, FEEDBACK & CONTROL

stakeholder in business environment



COMPONENTS OF INFORMATION SYSTEM



An information system consists of 5 major resources :
people, hardware, software, network & data.

PEOPLE RESOURCES

- * Include end-users and IS specialists.
- * End-users are also called clients, who use information system or the information it produces. They can be customers, salesperson, clerks, accountants or managers.
- * IS specialists are the one who design, develop & operate I. They include system analyst, s/w developers, system operator & technical personnel.

HARDWARE RESOURCES

- * Includes all physical devices & materials used in information processing

Eg: Computer Systems : Include CPU having HP & variety of connected devices.

Computer Peripherals

SOFTWARE RESOURCES

* Includes set of operating instructions called programs.

Eg: System S/W : Customized program necessary to run a system

Application S/W : Those that depend on system s/w for functioning.

Procedures : Operating instr for people who use info system

DATA RESOURCES

Data has many forms :

- Alphanumeric data consisting of alphabets, numbers & other characters
- Text data consisting of sentences & paragraphs.
- Image data such as graphic shapes, figures, photographs, video images
- Audio data such as human voice & other sounds.

Data resources are typically stored, organised & accessed into

- Data bases
- Knowledge bases,

NOTE : Data are raw facts whereas information is a processed data.

NETWORK RESOURCES

* Networks like internet, intranet & extranet are very essential for e-business & e-commerce.

* Network resources include :

- (1) communication media
- (2) Network Infrastructure

INFORMATION SYSTEM ACTIVITIES

There are 5 activities

- (1) Input of data Resources
- (2) Processing of Data into information.
- (3) Output of Information products
- (4) Storage of data Resources

Rakesh.S
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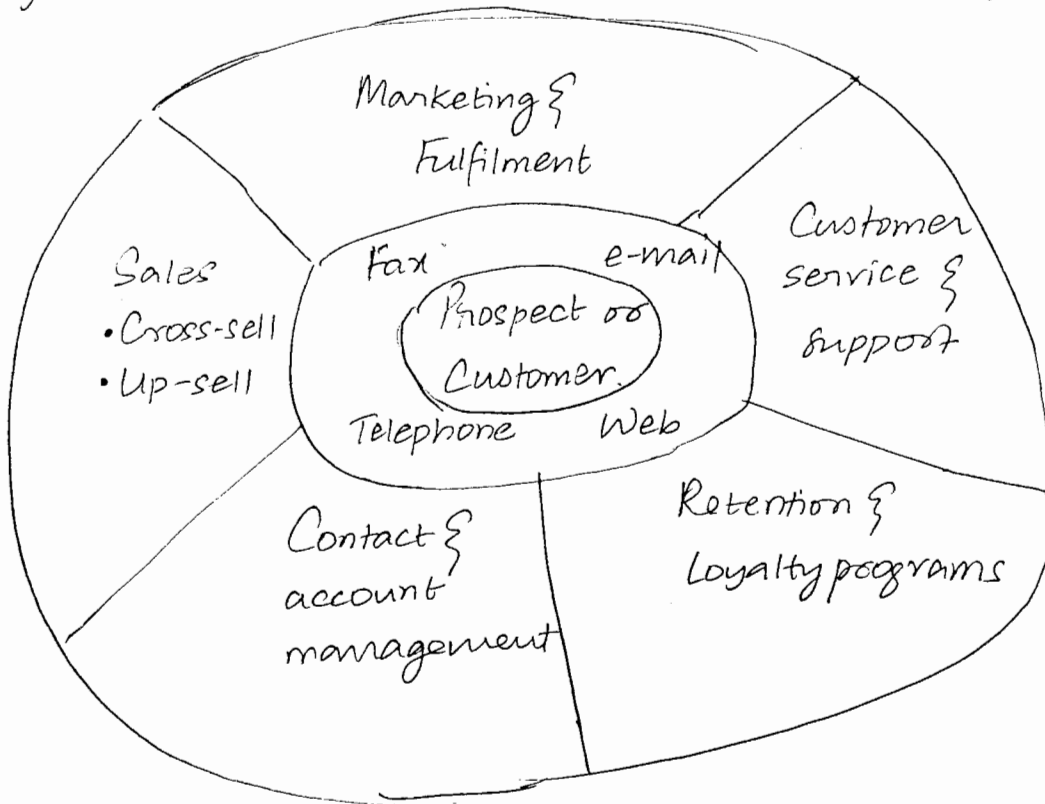
CHAPTER 1 - ENTERPRISE BUSINESS SYSTEMS.

Vaibhav Pai
BMSCE

3 major topics : CRM, ERP, SCM.

CUSTOMER RELATIONSHIP MANAGEMENT

CRM uses IT to create a cross functional enterprise system that integrates & automates many of the customer serving processes in sales, marketing & customer services that interact with a company's customers. CRM also creates an IT framework of web enabled slw & databases that integrates these processes with the rest of a company's business operations. CRM systems include a family of slw modules that provides the tools that enable a business & its employees to provide fast, convenient, dependable & consistent service to its customers. The fig. shows major application clusters (components) in CRM.



MCRCs

Marketing & fulfillment: CRM systems help marketing professionals help accomplish direct marketing campaigns by automating tasks such as qualifying leads for targeted marketing, scheduling & tracking direct marketing mailings. CRM s/w helps marketing pro. capture & manage prospect & customer response data in the CRM database, & analyze customer & business value of a company's direct marketing campaigns.

CRM assists in fulfilling prospect & customer responses & requests by quickly scheduling sales contacts & providing appropriate info. on products & services to them.

Customer service & supp.:

- CRM system provides service reps with s/w tools & access to common customer d/b shared by sales & marketing professionals.
- CRM helps customer service managers create, assign & manage requests for service by customers.
- Call centre s/w directs calls to customer support agents based on their skills to handle specific service requests.

Retention & Loyalty Programs:

- Enhancing & optimizing customer retention & loyalty is primary objective of CRM.
- CRM systems try to help a company identify, reward & market to their most loyal & profitable customers.
- CRM analytical s/w includes data mining tools & other analytical marketing s/w, while CRM d/b consist of customer data. These tools are used to identify profitable & loyal customers & direct the company's marketing programs towards them.

Contact & acc. mgmt.: CRM s/w helps sales, marketing & service pros.

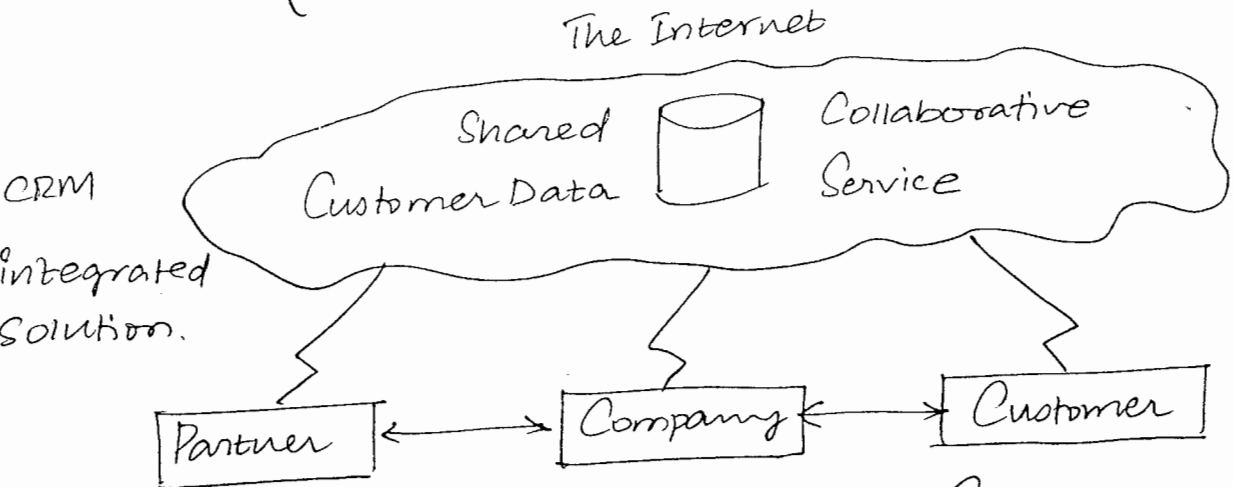
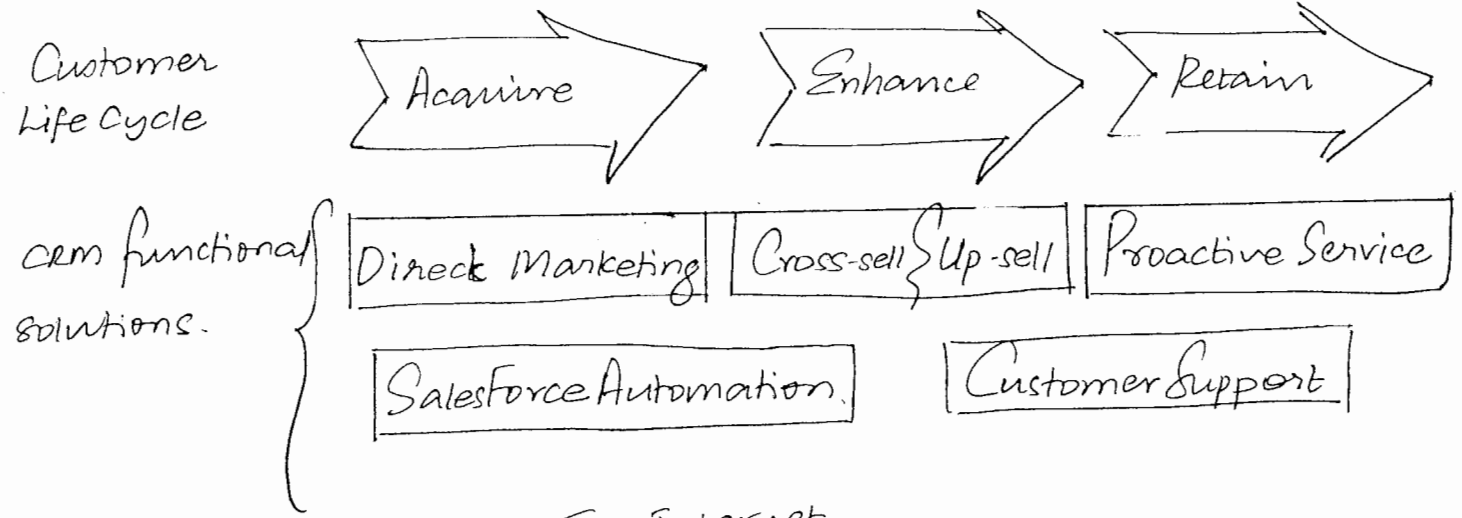
capture & track relevant data about every past & contact with prospects & customers, as well as other business events of customers.

Info is taken from all customers, such as telephone, fax, email, company's website, retail stores, kiosks & personal contacts.

customer info & makes it available throughout the company via ⁽²⁾ Internet, intranet for sales, marketing & other CRM applications.

Sales: CRM system provides sales reps with sw tools & company data resources they need to support & manage their sales activities & optimize cross selling & up selling. Eg.: sales prospect & product info., product configuration & sales auto generation capabilities.

The Three Phases of CRM. (AER)



3 phases of relationship b/w a business & its customers are:

Acquire: A business relies of CRM sw tools & d/b to help it acquire new customers by doing a superior job of contact mgmt., sales prospecting, selling, direct marketing & fulfillment. The goal of these CRM functions is to help customers perceive the value of a superior product offered by an outstanding company.

help keep customers happy by supporting superior service from a responsive networked team of sales & service specialists & business pros.

CRM sales force automation & direct marketing & fulfillment tools help companies cross sell & up sell to their customers, thus increasing profits.

• Retain: CRM analytical SW & d/b help a company proactively identify & reward its most loyal & profitable customers to retain & expand their business via targeted marketing & relationship marketing programs.

Benefits of CRM:

- CRM allows a business to identify & target their best customers, so they can be retained as lifelong customers for more profitable services.
- It makes possible customization & personalisation of products & services based on customer wants, needs, buying habits & life cycles.
- helps keep track of when a customer contacts the company, regardless of the contact time.
- CRM systems can enable a company to provide a consistent customer experience & superior service & support at contact points chosen by the customer.

CRM failures:

- Business benefits of CRM are not guaranteed, & have proven elusive at many companies.
- CRM applications have high rate of failure or dissatisfaction due to lack of understanding & preparation.

The follow. fig. shows four types of CRM being implemented by many companies & can be viewed as trends in how many companies implement CRM applications.

Types of CRM

Business Value

Operational CRM

- Supports customer interaction through channels like phone, fax, email, chat & mobile device
- Synchronises customer interactions.
- Makes a company easier to do business with.

Analytical CRM

- Extracts customer history, preferences & profitability info from your data warehouse
- Allows to analyze, predict & derive customer value & behaviour & forecast demand.
- Lets approach customers with relevant info & offers.

Collaborative CRM

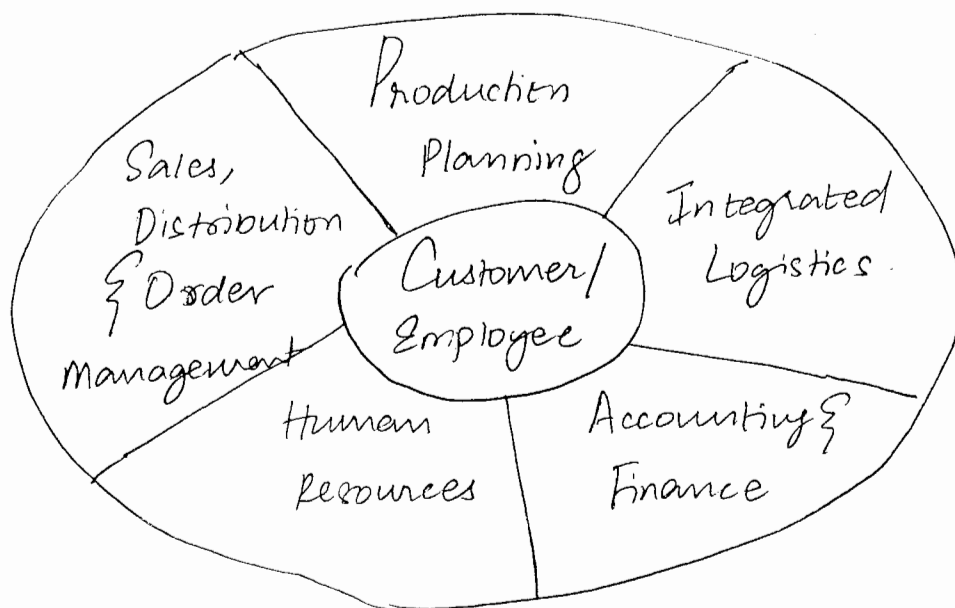
- Enables easy collaboration with customers, suppliers & partners.
- Improves efficiency & integration
- Allows greater responsiveness to customer needs. ~~through sourcing a~~

Portal-Based CRM

- Provides all users with the tools & info that fit their individual roles & preferences.
- Empowers all employees to respond to customer demands more quickly & become truly customer focused.
- Provides the capability to instantly access link & use all internal & external customer information.

- ERP is a cross-functional enterprise system consisting of an integrated suite of s/w modules that supports the basic internal business process of a company.
- ERP gives a company an integrated view of its core business processes such as production, order processing & inventory management, along with ERP application s/w & common d/b maintained by a DBMS.
- ERP systems track business resources (cash, raw materials) & status of commitments made by the business (customer orders, purchase orders).
- ERP s/w suites consist of integrated modules of man. fac., distribution, sales, accounting & human resource applications.
- ERP systems support many vital human resource processes - personnel planning, salary & benefits admin., managerial accounting applications.

Fig.: Major application components of ERP (PIAHS)



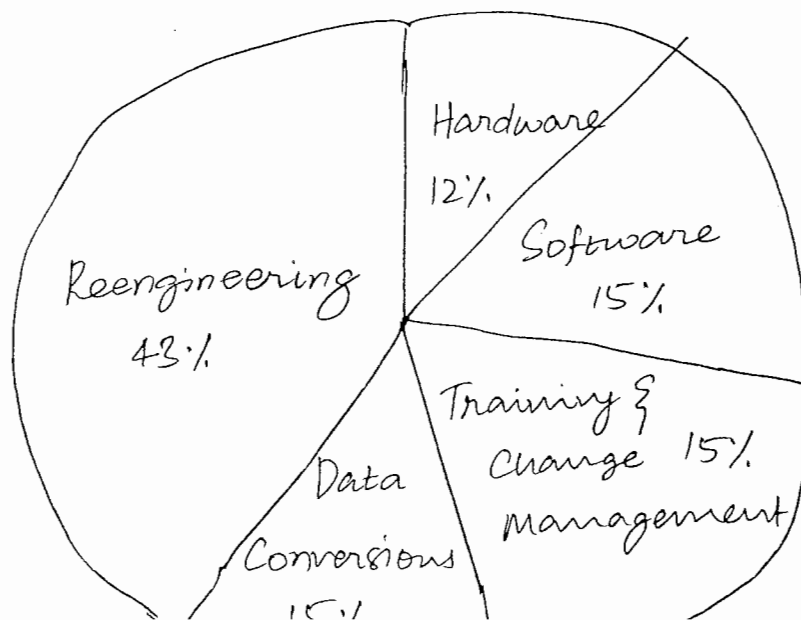
Benefits & Challenges of ERP

ERP can generate many business benefits for a company:

- Quality & Efficiency: ERP creates a framework for integrating & improving a company's internal business processes that leads to improvement in quality & efficiency of cust. service, production & distribution.
- Decreased Costs: It leads to significant reductions in transaction processing costs & hardware, s/w, & IT support staff.
- Decision Support: ERP provides vital cross functional information on business performance quickly to managers to significantly improve their abilities to make better decisions in a timely manner.
- Enterprise Agility: Implementing ERP systems breaks down many departmental & functional walls of business processes & information systems. This results in more flexible organisational structures, managerial responsibilities & work roles, & therefore a more agile & adaptive organisation.

Costs of ERP: (N.I.I.)

Fig.: Typical costs of implementing ERP system.

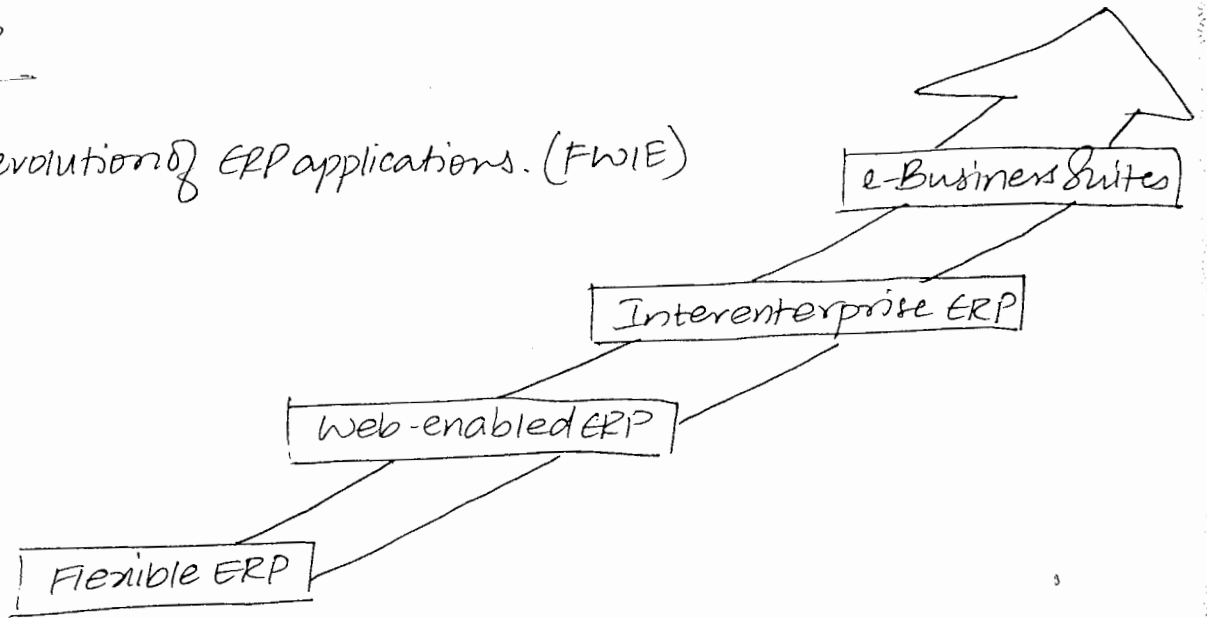


Causes of ERP failures

- Business managers & IT pros. of companies (where ERP failed) underestimated the complexity of the planning, development & training needed to prepare for a new ERP system.
- Failure to involve affected employees in the planning & development phases & to change management programs, or trying to do too much too fast in conversion process.
- Insufficient training in new work tasks reqd. by ERP system & failure to do enough data conversion & testing.

Trends in ERP

Fig.: Trends in evolution of ERP applications. (FWIE)



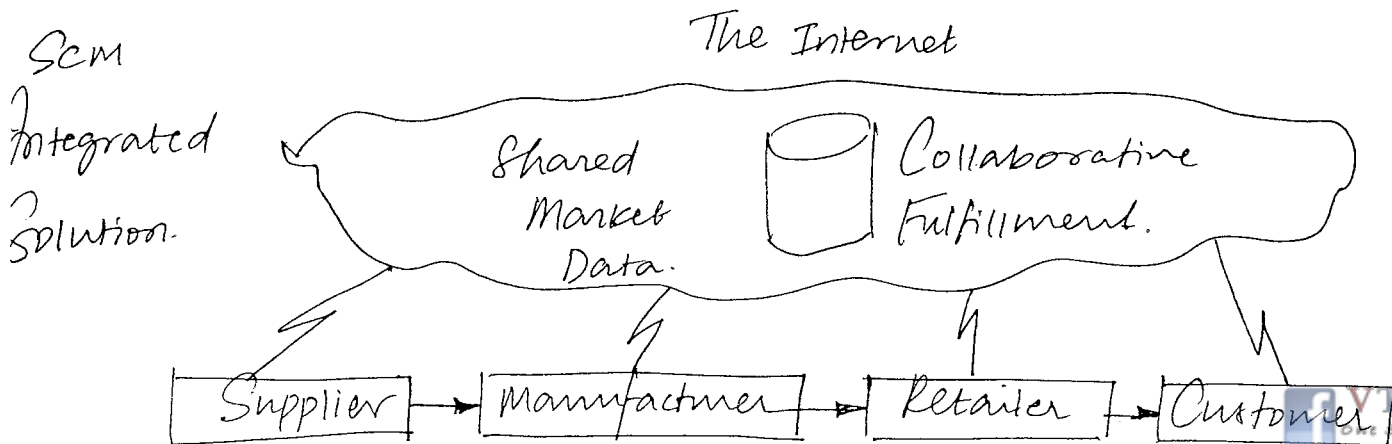
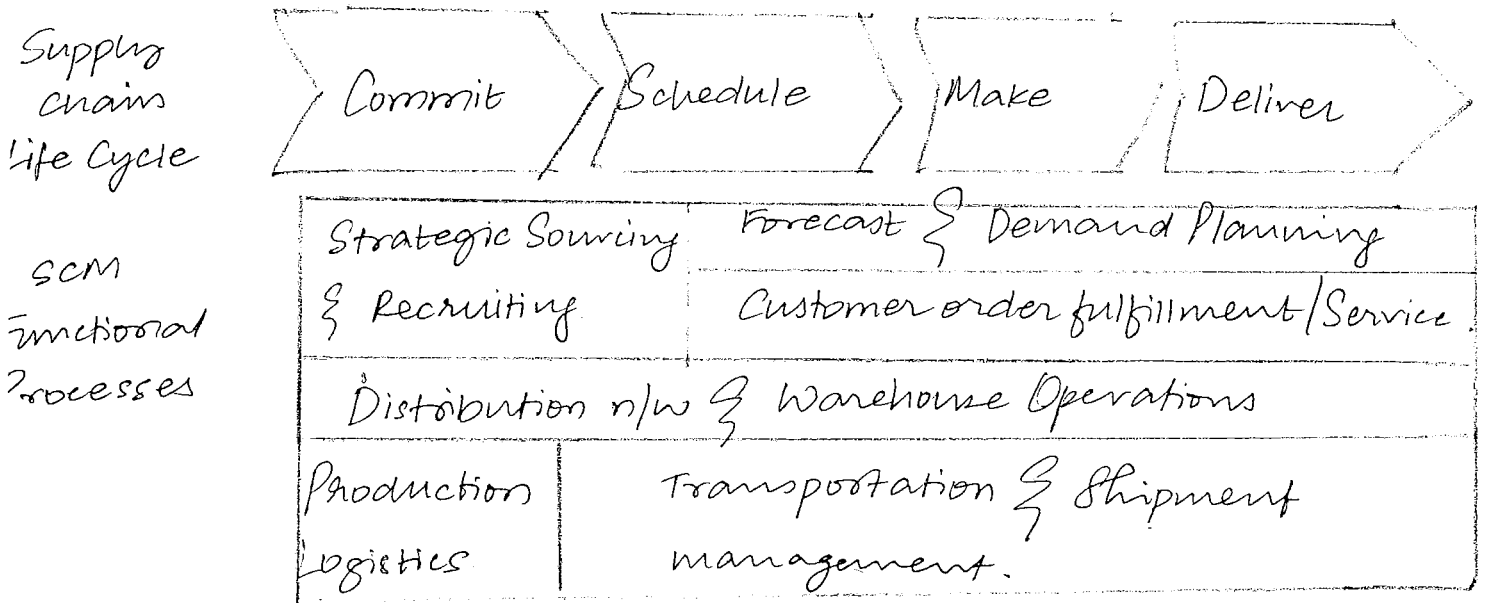
- ERP s/w that were part of ERP in 1990s, which were inflexible, have gradually been modified into more flexible products. This makes s/w easier to integrate with other business app. programs.
- Growth of Internets, intranets & extranets led to development of web interfaces & web-enab. ERPs. These make ERP systems easier to connect & use; also connect to systems of business partners.
- Internet connectivity has led to development of interenterprise ERP which provide web-enabled links b/w key business systems of a company & its customers, suppliers, distributors & others.

SUPPLY CHAIN MANAGEMENT

SCM is a cross-functional interenterprise system that uses IT to help support & manage the links b/w some of a company's key business processes & those of its suppliers, customers & business partners.

The goal of SCM is to create a fast, efficient & low-cost n/w of business relationships or supply chain, to get a company's products from concept to market.

Fig.: SCM slw & Internet technologies can help companies reengineer & integrate functional SCM processes that support supply chain life cycle.



EDI was one of the earliest uses of IT for SCM. It involves electronic exchange of business transaction documents over the Internet & other n/w b/w supply chain trading partners.

Data representing a variety of business transaction documents (purchase orders, invoices, requests for quotations & shipping notices) are automatically exchanged b/w computers using standard document message formats. EDI s/w is used to convert a company's own document formats into standardised ^{EDI} formats. An EDI over the Internet, using secure VPN, is a B2B ecomm. app.

Fig.: A Typical Example of EDI. (see T.B.)

The Role of SCM.

The following fig. helps understand role & activities of scm in business. The top 3 levels show strategic, tactical & operational objectives & outcomes of scm planning, which are then executed by business partners in scm at Execution level.

FIGURE 8.13 The objectives and outcomes of supply chain management are accomplished for a business with the help of interenterprise SCM information systems.

SCM Objectives		SCM Outcomes
What? Establish objectives, policies, and operating footprint	Strategic	<ul style="list-style-type: none">• Objectives• Supply policies (service levels)• Network design
How much? Deploy resources to match supply to demand	Tactical	<ul style="list-style-type: none">• Demand forecast• Production, procurement, logistics plan• Inventory targets
When? Where? Schedule, monitor, control, and adjust production	Operational	<ul style="list-style-type: none">• Work center scheduling• Order/inventory tracking
Do Build and transport	Execution	<ul style="list-style-type: none">• Order cycle• Material movement

Fig 8.14: SCM functions & potential benefits.

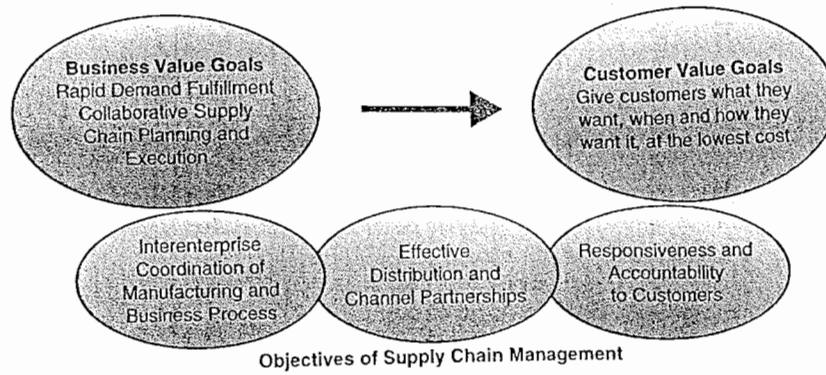
FIGURE 8.14 The supply chain management functions and potential benefits offered by the SCM module in the mySAP e-business software suite.

SCM Functions	SCM Outcomes
Planning	
Supply chain design	<ul style="list-style-type: none"> • Optimize network of suppliers, plants, and distribution centers
Collaborative demand and supply planning	<ul style="list-style-type: none"> • Develop an accurate forecast of customer demand by sharing demand and supply forecasts instantaneously across multiple tiers • Internet-enable collaborative scenarios, such as collaborative planning, forecasting, and replenishment (CPFR), and vendor-managed inventory
Execution	
Materials management	<ul style="list-style-type: none"> • Share accurate inventory and procurement order information • Ensure materials required for production are available in the right place at the right time • Reduce raw material spending, procurement costs, safety stocks, and raw material and finished goods inventory
Collaborative manufacturing	<ul style="list-style-type: none"> • Optimize plans and schedules while considering resource, material, and dependency constraints
Collaborative fulfillment	<ul style="list-style-type: none"> • Commit to delivery dates in real time • Fulfill orders from all channels on time with order management, transportation planning, and vehicle scheduling • Support the entire logistics process, including picking, packing, shipping, and delivery in foreign countries
Supply chain event management	<ul style="list-style-type: none"> • Monitor every stage of the supply chain process, from price quotation to the moment the customer receives the product, and receive alerts when problems arise
Supply chain performance management	<ul style="list-style-type: none"> • Report key measurements in the supply chain, such as filling rates, order cycle times, and capacity utilization

Challenges of SCM.

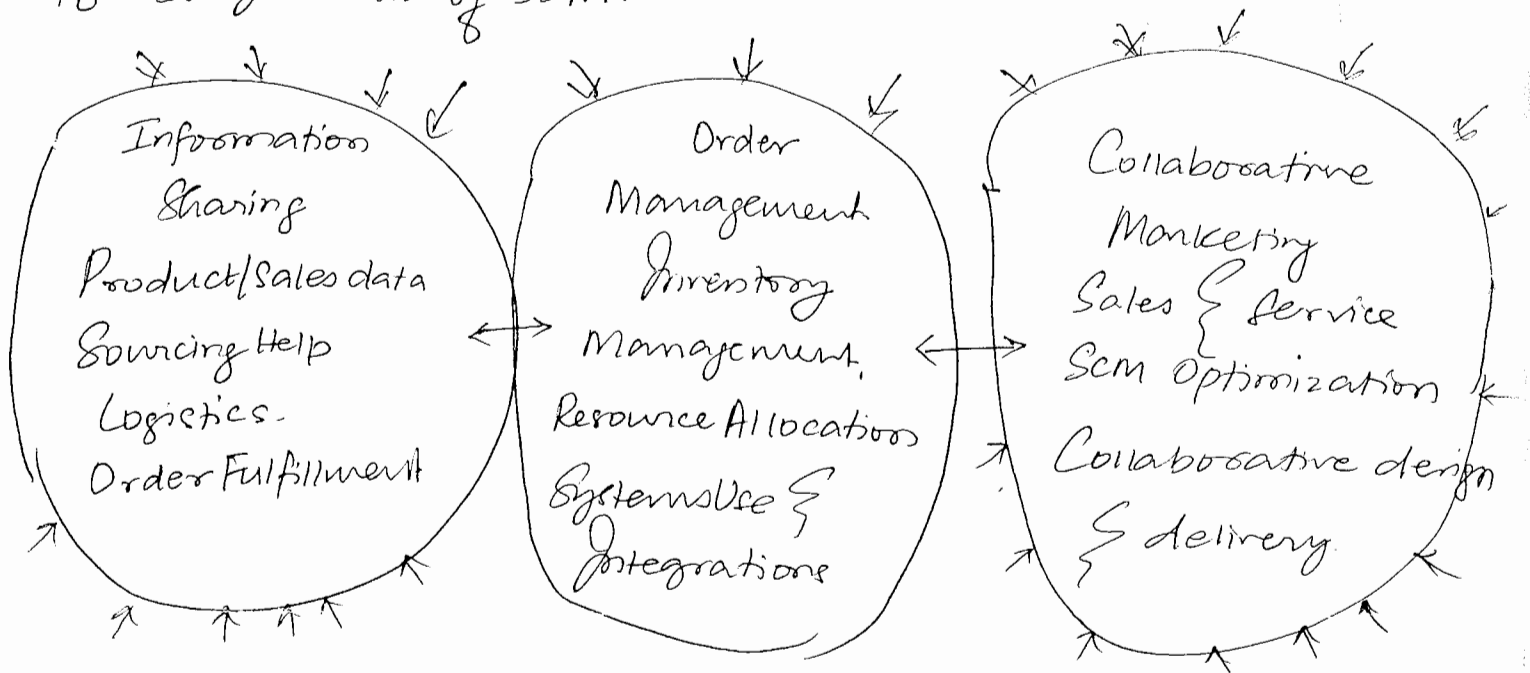
fig.: 8.15. (Self explanatory)

FIGURE 8.15
Achieving the goals and objectives of supply chain management is a major challenge for many companies today.



Trends in SCM

fig: Stages in use of SCM.



SCM Stage 1

- Current supply chain improvement.
- Supply chain, e-commerce coupled.

SCM Stage 2

- Intranet/extranet links to trading partners.
- Supplier n/w expansion.

SCM Stage 3

- Collaborative Planning & fulfillment.
- Extranet & exchange based collaboration.

chapter 1: Electronic Commerce Fundamentals

✱

INTRODUCTION TO E-COMMERCEDefinition: e-commerce is defined as

- buying and selling
 - marketing and servicing
 - delivery and payment of products, services, and information over the internet, intranets, extranets & other n/w's
- b/w an
internetworked enterprise & its prospects, customers, suppliers & other business partners.

Categories of e-commerce

There are 3 basic-categories of e-commerce

(i) Business-to-consumer (B2C) e-commerce

- * In this form of e-commerce, a business must develop attractive electronic market places to sell products & services to consumers.

For eg: Many companies offer e-commerce websites that provide multi-media catalogs, secure electronic payment system, online customer support etc.

(ii) Business-to-business (B2B) e-commerce

- * This category of e-commerce involves both electronic market places and direct market links b/w business.

For eg: Many companies offer secure internet or extranet e-commerce catalog websites for business customers & suppliers.

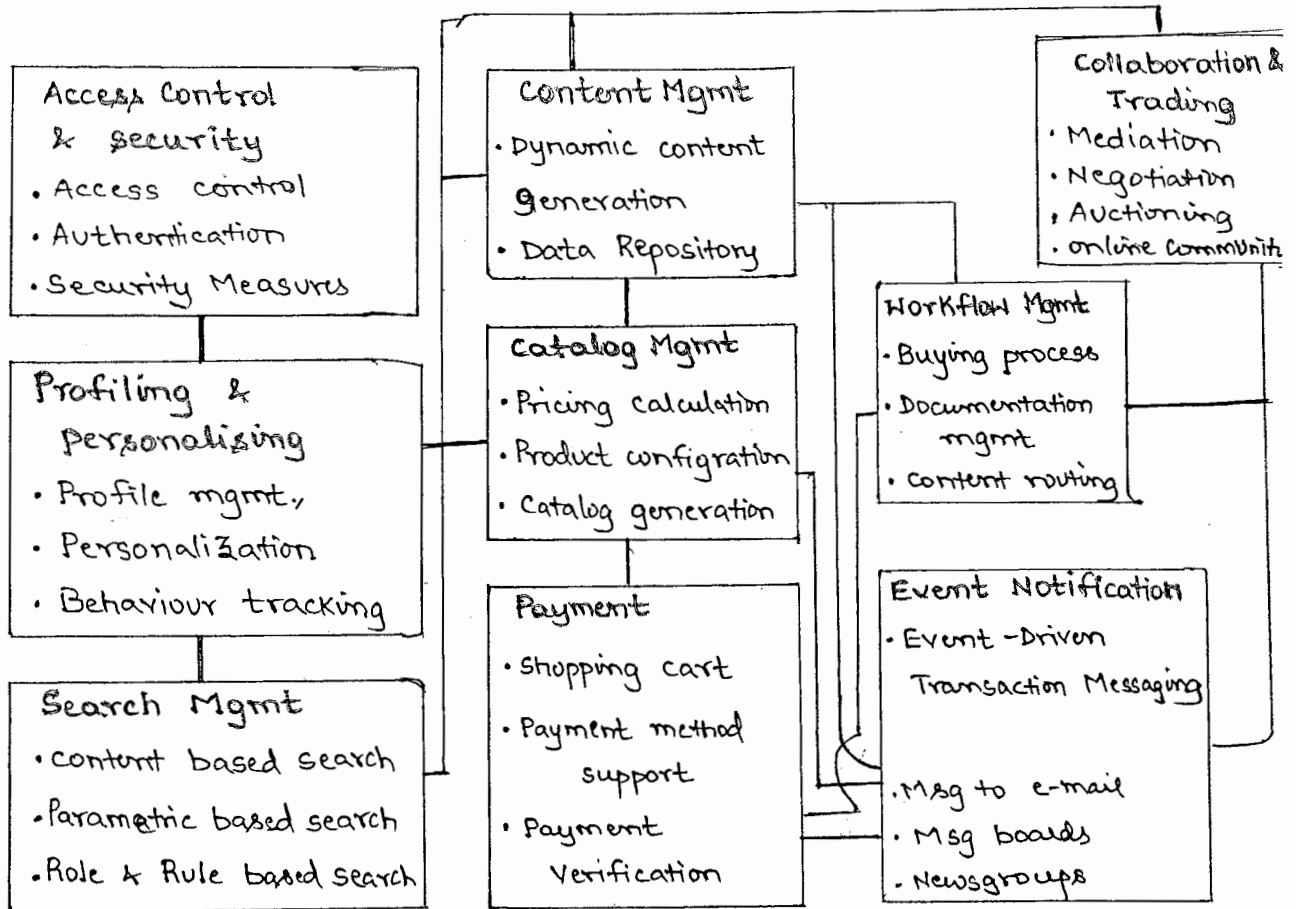
(iii) Consumer-to-consumer (C2C) e-commerce

- * Includes auction websites (like - ebay) where consumers can buy & sell with each-other in an auction process.
- * It also includes advertising of product.

ESSENTIAL e-COMMERCE PROCESSES

* Fig shows essential e-commerce processes reqd for the successful operation & management of e-commerce activities.

This figure highlights 9 key components of an e-commerce process architecture.



1. Access & Control Security

* E-commerce process must establish mutual trust & secure access b/w the parties in an e-commerce transaction by authenticating users, authorising access, and enforcing security features.

2. Profiling & Personalization

* once you have gained access to an e-commerce site, profiling processes can occur that gather data on you and your website behaviour.

* These profiles are then used to recognize you as an individual user & provide you a personalized view.

9. Collaboration & Trading

- * This major category of e-commerce processes are those that support collaboration-arrangements & trading services needed by customers, suppliers & other stakeholders to accomplish e-commerce transactions.

ELECTRONIC PAYMENT PROCESSES (e-payment process)

- * Electronic payment systems are cash or credit payment methods using various electronic technologies.

Web Payment Processes

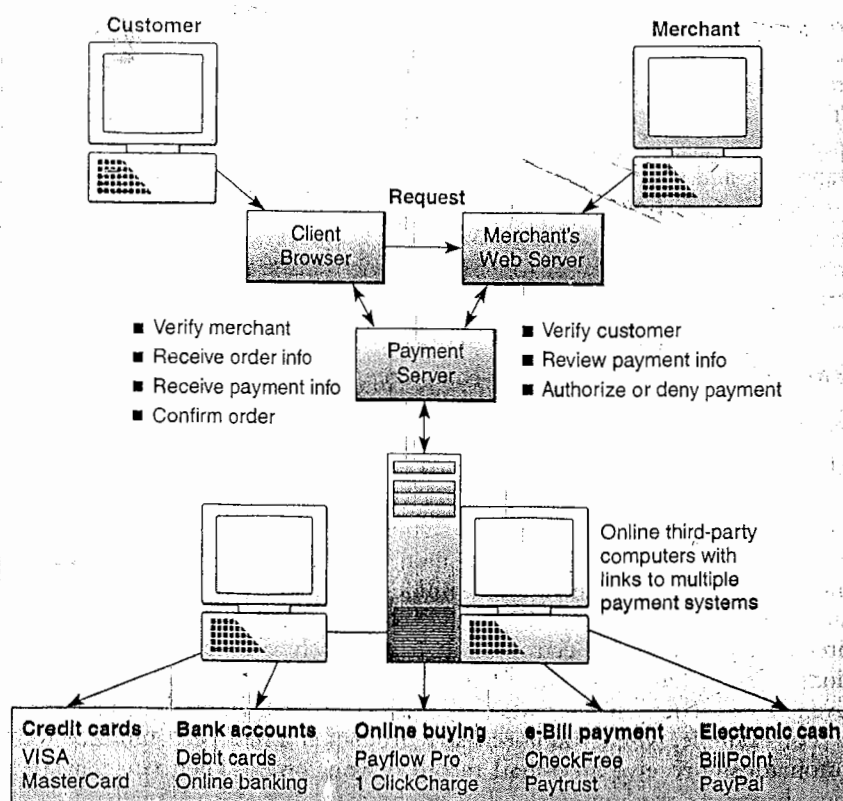
- * These are credit-card payment processes.
- * Most e-commerce systems on the web involving B2C depend on credit card payment processes.

Electronic Funds Transfer (EFT)

- * EFT systems use a variety of IT to capture & process money & credit transfers b/w banks & business & their customers.

Secure Electronic payments

- * The figure below shows secure electronic payment system with many payment alternatives.



3. Search Management

- * Efficient & effective search processes in an e-commerce web-site would help customers to find out specific product or service.

4. Content Management

- * Content mgmt s/w helps e-commerce companies develop, generate, deliver, update & archive text data and multimedia information at e-commerce websites.

Eg: Story Server content mgmt s/w.

5. Catalog Management

- * S/w that helps to generate & manage catalog content.

Eg: Centel Stage catalog mgmt s/w.

6. Payment

- * concerned with paying to the purchased products.

↳ Shopping cart

↳ Payment method support

↳ Payment verification

7. Workflow management

- * Software that helps employees electronically collaborate to accomplish structured work tasks within knowledge based business processes.

8. Event Notification

- * Event notification processes play an impt role in e-commerce systems, since customers, suppliers, employees and other stakeholders must be notified of all the events that might affect their status in a transaction.

* When you make on-line purchase on internet, your credit card no. is vulnerable to interception by n/w sniffers (s/w that easily recognizes credit card number format).

* Several basic security measures are being used to solve this security problem.

↳ encrypt the data passing b/w customer & merchant.

↳ encrypt the data passing b/w customer & company authorizing the credit card transactions.

↳ take sensitive information offline.

* For eg:

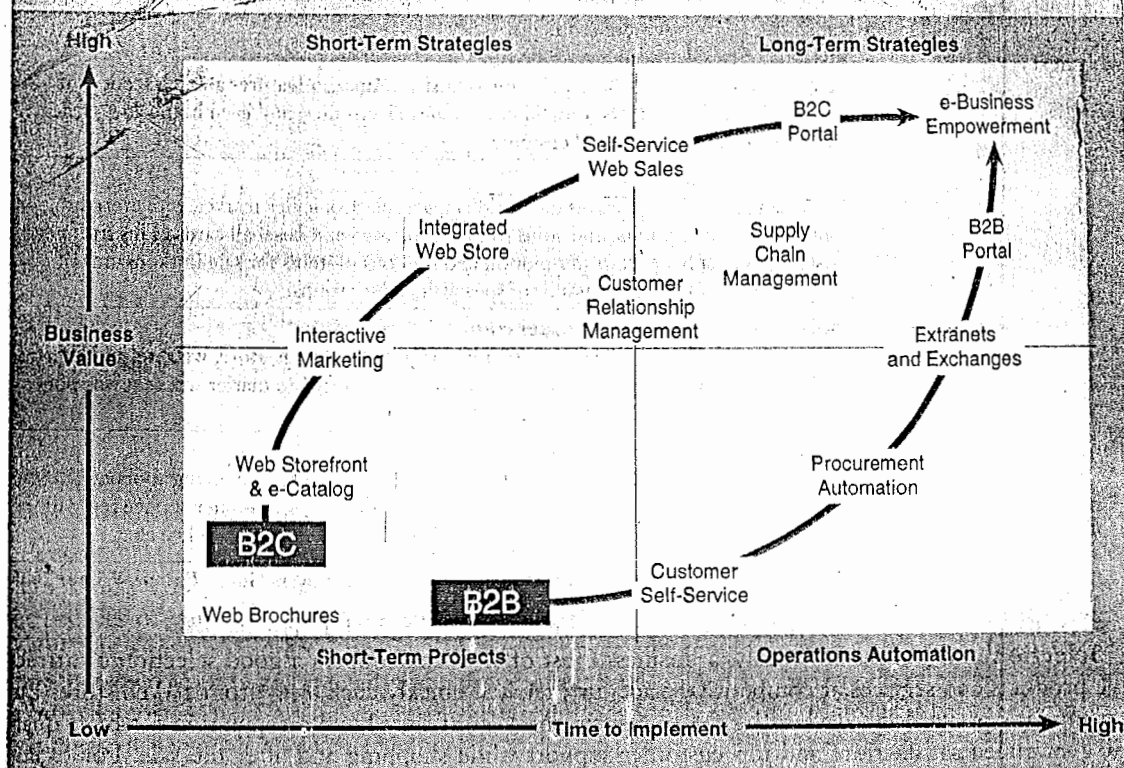
Many companies use Secure Socket Layer (SSL) security method developed by netscape communications that automatically encrypts the data passing b/w your web-browser & merchant's server. However, sensitive info is still vulnerable.

So digital wallet payment system was developed.

chapter 2: E-Commerce Applications and Issues

E-COMMERCE APPLICATION TRENDS

FIGURE 9.9 Trends in B2C and B2B e-commerce, and the business strategies and value driving these trends.



In fig we notice,

- * B2C moves towards web storefront & e-catalog & Interactive Marketing
they provide personalized shopping experience for customers.
- * B2C Also moves towards Self service Model
where customers customize the products & services they wish to buy.
- * B2B moves towards full service & wide selection retail web portals.
- * B2B Also trending towards exchange & auction markets.

NOTE :

(No much theory to write on this topic. If asked using fig elaborate the answer

BUSINESS TO CONSUMER E-COMMERCE



e-Commerce success factors [Hint: SP CLAPS]

1. Selection and value

* A business must offer web shoppers a good selection of attractive products, competitive prices, satisfaction guarantees and customer support after sale.

2. Performance and service

* A site must be efficiently designed for ease of access, shopping & buying, with sufficient server power & n/w capacity to support website traffic.
* Web-shopping & customer service must be friendly, helpful & quick & easy.

3. Community Relationships

* It speaks abt linking customers, suppliers, company representatives & others to related sites.

4. Look & feel

* sites should offer an attractive web-storefront, shopping areas & multimedia product catalogs.

5. Advertising & incentives

* Includes advertising the products, special offers & their affiliated sites

6. Personal attention

* Individual attention satisfies the customers. This one-to-one marketing is one of the strong success factor

7. Security & reliability

* Security of customer infoⁿ & websites transactions, trustworthy product infoⁿ, and reliable order fulfilment

WEB STORE REQUIREMENTS

* Here, we discuss the essential web-store requirements that you would have to implement to support a successful retail business on the web (Below fig summarizes it)

Developing a Web Store		
• Build	• Market	
✓ Website design tools	✓ Web page advertising	
✓ Site design templates	✓ E-mail promotions	
✓ Custom design services	✓ Web advertising exchanges with affiliate sites	
✓ Website hosting	✓ Search engine registrations	
Serving Your Customers		
• Serve	• Transact	• Support
✓ Personalized Web pages	✓ Flexible order process	✓ Website online help
✓ Dynamic multimedia catalog	✓ Credit card processing	✓ Customer service e-mail
✓ Catalog search engine	✓ Shipping and tax calculations	✓ Discussion groups and chat rooms
✓ Integrated shopping cart	✓ E-mail order notifications	✓ Links to related sites
Managing a Web Store		
• Manage	• Operate	• Protect
✓ Website usage statistics	✓ 24/7 website hosting	✓ User password protection
✓ Sales and inventory reports	✓ Online tech support	✓ Encrypted order processing
✓ Customer account management	✓ Scalable network capacity	✓ Encrypted website administration
✓ Links to accounting system	✓ Redundant servers and power	✓ Network firewalls and security monitors

Fig: These web store requirements must be implemented by its company or its website hosting service, in order to develop a successful e-commerce business

Developing a webstore

- * Build website using simple website design tools.
- * Market the website to attract visitors

Servicing Customers

- * Service customers by creating - user profiles, customer files, personal web pages & promotions that help to develop a one-to-one relationship.
- * Transact with customers by providing, dynamically changing catalogs, fast catalog search engine, and convenient shopping cart system integrated with promotions, payment, shipping, & account information.
- * Support customers with help menu, tutorials, FAQs & e-mail correspondance with customer service representatives

Managing a Webstore

- * Manage both business & website.
- * Operate 24 X 7 (24 hrs a day & 7 days a week).
- * Protect customer records, and repel hacker attacks & other security threats.

BUSINESS - TO - BUSINESS E-COMMERCE

Definition: Business-to-Business (B2B) e-commerce is the whole sale & supply side of the commercial process, where businesses buy, sell or trade with each other

E-COMMERCE MARKET PLACES

- * Businesses of any size can buy everything at e-commerce market places.
- * The 5 major types of e-commerce market places used by business today are:

FIGURE 9.15
Types of e-commerce marketplaces.

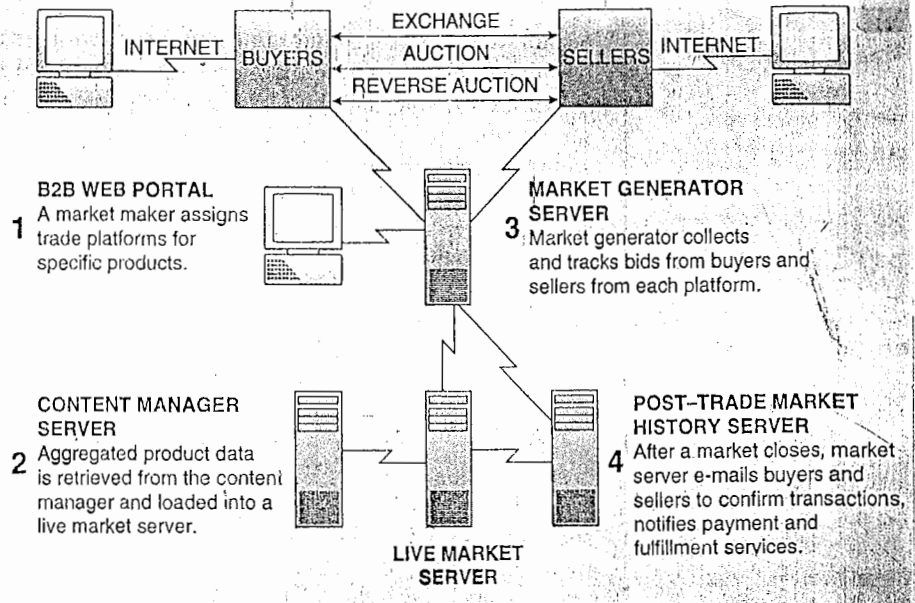
E-Commerce Marketplaces	
• One to many: Sell-side marketplaces. Host one major supplier, who dictates product catalog offerings and prices. Examples: Cisco.com and Dell.com.	
• Many to one: Buy-side marketplaces. Attract many suppliers that flock to these exchanges to bid on the business of a major buyer like GE or AT&T.	
• Some to many: Distribution marketplaces. Unite major suppliers who combine their product catalogs to attract a larger audience of buyers. Examples: VerticalNet and Works.com	
• Many to some: Procurement marketplaces. Unite major buyers who combine their purchasing catalogs to attract more suppliers and thus more competition and lower prices. Examples: the auto industry's Covisint and energy industry's Pantellos.	
• Many to many: Auction marketplaces used by many buyers and sellers that can create a variety of buyers' or sellers' auctions to dynamically optimize prices. Examples are eBay and FreeMarkets.	

e-commerce web portals.

Definition: These are the websites developed & hosted by third party market-maker companies who serve as infomediators that bring buyers & sellers together in catalog, exchange, and auction markets.

Infomediators are the companies that serve as intermediaries in e-business & e-commerce transactions.

FIGURE 9.16
This is an example of a B2B e-commerce Web portal that offers exchange, auction, and reverse auction electronic markets.



CLICKS AND BRICKS IN E-COMMERCE

* The figure below illustrates the spectrum of alternatives & benefits trade-offs that e-business enterprise face when choosing an e-commerce clicks & bricks.

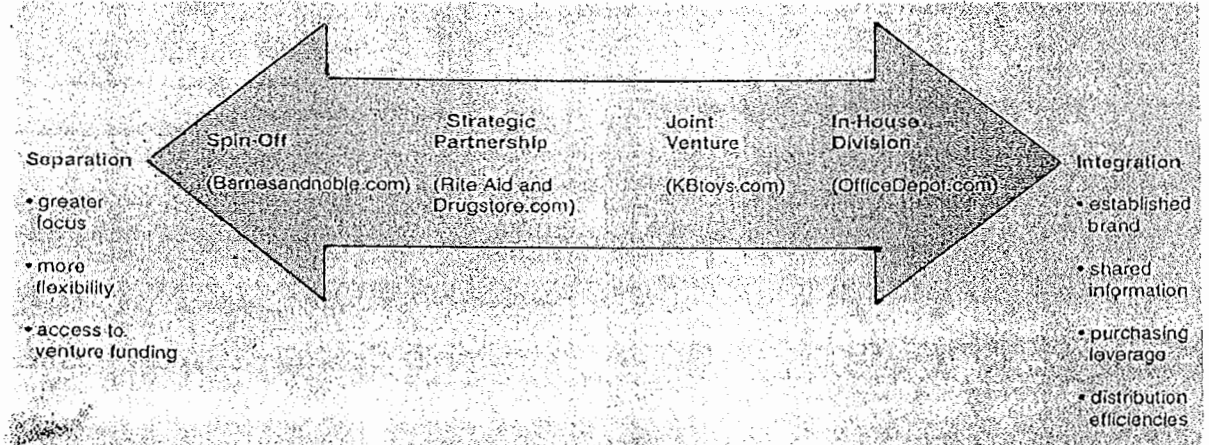


Fig: Companies have a spectrum of alternatives and benefits trade-offs when deciding upon an integrated or separate e-commerce business

e-commerce channel

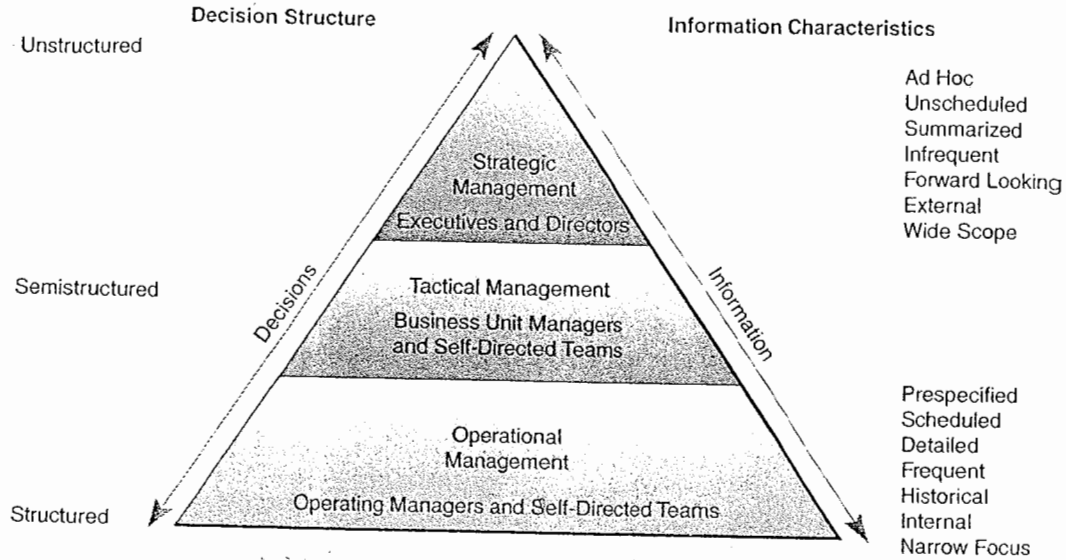
Definition : The marketing or sales channel created by a company to conduct & manage its chosen e-commerce activities



Rakesh.S

Information, Decisions & Management

* The figure below emphasizes that the type of information reqd by decision makers in a company is directly related to level of management decision making.

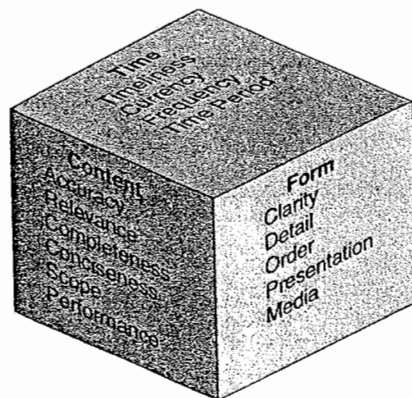


Following are the levels of managerial decision making.

- Strategic Management
- Tactical Management
- Operational Management.

Information quality

- * Information which is outdated, inaccurate or hard to understand are not encouraged in business.
- * People want information of high quality which explains product characteristics, attributes & so on.
- * Figure below summarizes attributes of information quality.



Decision Structure

Decision made at

- Operational mgmt level are structured.
- Tactical mgmt level are semi-structured
- Strategic mgmt level are unstructured.

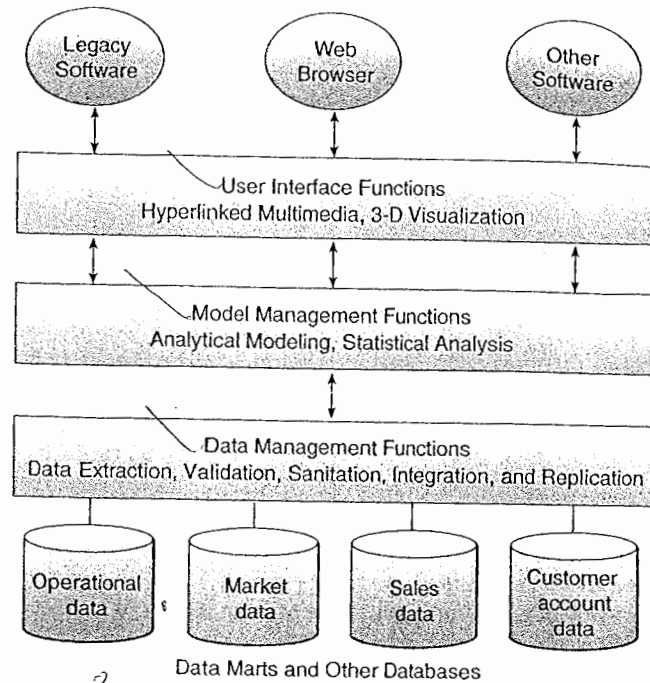


DECISION SUPPORT SYSTEM (DSS)

- * Decision support system are Computer-based information systems that provide interactive information support to managers & business professionals during the decision making process
- * Decision Support system uses
 - (1) Analytical models
 - (2) Specialized databases
 - (3) Decision makes own insights & judgement.
 - (4) Computer-based modeling process.
- * DSS systems are designed to be ad-hoc, quick-response systems that are initiated & controlled by decision makers

DSS components

- * Unlike MIS, the DSS rely on model bases & databases.
- * DSS model base is a slw component that consists of models used in computational & analytical routines that mathematically express relationships among variables.
- * DSS slw typically contains built-in analytical modeling routines & also enables you to build your own models.
- * Many DSS packages are now available in microcomputer & web-enabled versions.
- * The figure below outlines the components of a web-enabled marketing decision support system



MANAGEMENT INFORMATION SYSTEM (MIS)

- * Mgmt Information systems were the original type of information system developed to support managerial decision making.
- * Managers & other decision makers use MIS to request information at their networked workstations that support their decision making activities.

Management Reporting Alternatives

MIS provide a variety of information to managers. Such system provides 4 major reporting alternatives

(1) Periodic scheduled Reports

↳ Daily or weekly sales analysis reports & monthly financial statements.

(2) Exception Reports

↳ Reports are produced only when exception conditions occur

↳ Exception reporting reduces information overload

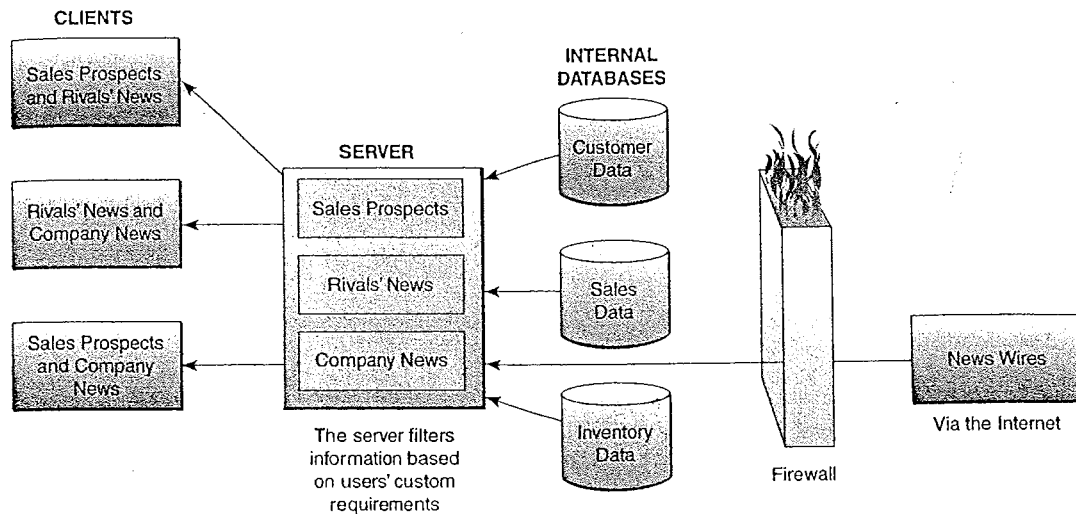
(3) Demand Reports and Responses

↳ These are the information available only when manager demands it.

(4) Push Reporting

↳ Information is pushed to a manager's networked workstation.

* Fig below shows how internet & intranet system "push" information to employees.



* list out the major differences in MIS & DSS

	Management Information Systems	Decision Support Systems
• Decision support provided	Provide information about the performance of the organization	Provide information and decision support techniques to analyze specific problems or opportunities
• Information form and frequency	Periodic, exception, demand, and push reports and responses	Interactive inquiries and responses
• Information format	Prespecified, fixed format	Ad hoc, flexible, and adaptable format
• Information processing methodology	Information produced by extraction and manipulation of business data	Information produced by analytical modeling of business data

EXECUTIVE INFORMATION SYSTEMS

- * EIS are information systems that combine many of the features of MIS & DSS.

$$\text{EIS} = \text{MIS} + \text{DIS}$$

- * It focuses on meeting the strategic information needs of top management.
- * Its goal is to provide top executives with immediate & easy access to CSFs (critical success factors)
- * EIS is widely used by managers, analysts & other knowledge workers.
- * The alternative name of executive info system is enterprise information system (EIS) and executive support system (ESS).

Features of EIS

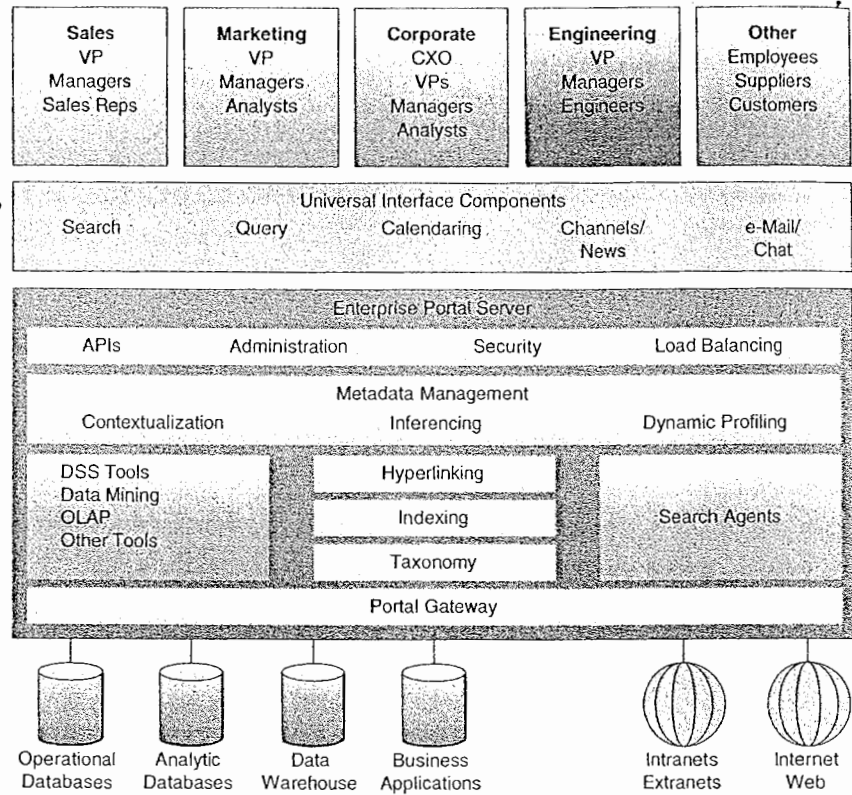
1. Information presentation methods used by EIS include exception reporting and trend analysis.
2. Drill-down is also one of the feature of EIS.

Enterprise Information & Knowledge portals.

- * Enterprise information portals provide a customized & personalized web-based interface for corporate intranet to easily access internal & external business applications, databases, and information services
- * Enterprise Knowledge portal is a corporate intranet portal that extends the use of EIP to include
 - mgmt functions &
 - Knowledge base resources.

FIGURE 10.19

The components of this enterprise information portal identify it as a Web-enabled decision support system that can be personalized for executives, managers, employees, suppliers, customers, and other business partners.



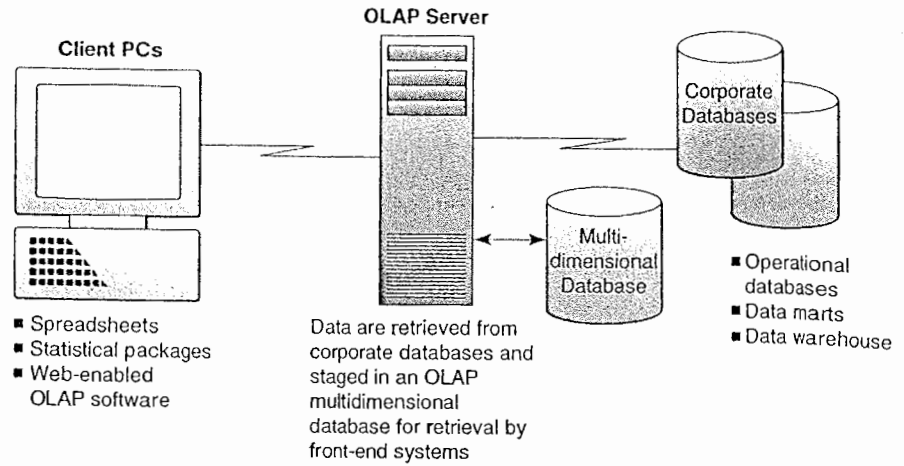
ONLINE - ANALYTICAL PROCESSING (OLAP)

- * Online analytical processing (OLAP) enables managers & analysts to interactively examine & manipulate large amt of detailed & consolidated data.
- * OLAP involves analyzing complex relationships among thousands or even millions of data items stored in data marts, data warehouses & multidimensional databases to discover patterns, trends & exception conditions.
- * OLAP involves operations like
 - ↳ Consolidation
↳ Consolidation involves aggregation of data.
 - ↳ Drill - Down
↳ OLAP can go in reverse direction & automatically display detail data that comprise consolidated data. This is called drill-down.
 - ↳ Slicing & Dicing

↳ It refers to the ability to look at the

FIGURE 10.10

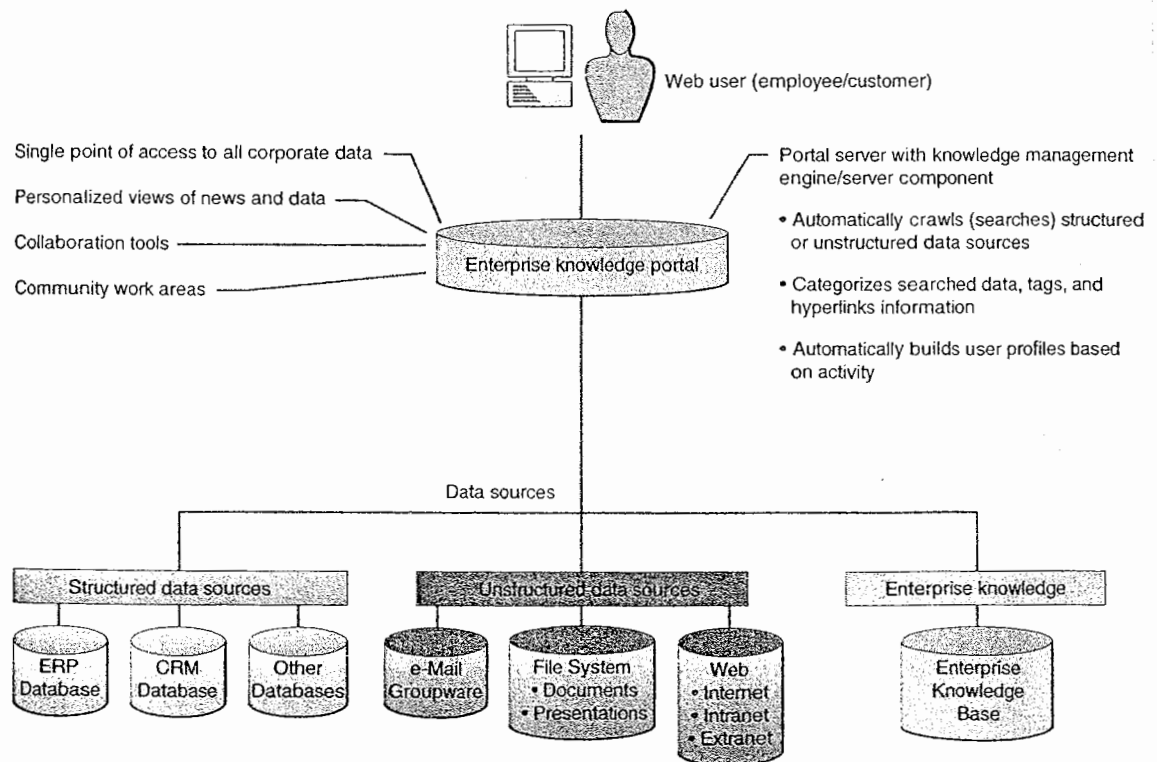
Online analytical processing may involve the use of specialized servers and multidimensional databases. OLAP provides fast answers to complex queries posed by managers and analysts using traditional and Web-enabled OLAP software.



KNOWLEDGE MANAGEMENT SYSTEM

- * Knowledge Mgmt System helps to gather, organize, and share business knowledge within an organisation.
 - * For many companies, EIP are the entry to corporate intranets that serve as their knowledge management systems.
- That's why such portal are called enterprise knowledge portals by their vendors.

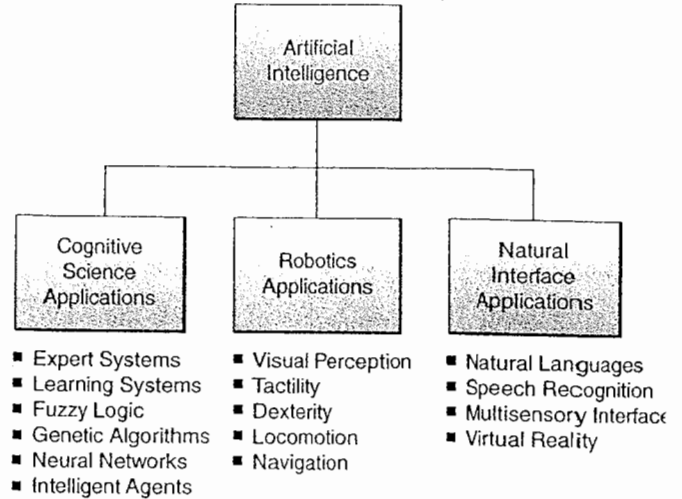
FIGURE 10.20 This example of the capabilities and components of an enterprise knowledge portal emphasizes its use as a Web-based knowledge management system.



ARTIFICIAL INTELLIGENCE

* The major application domains of artificial intelligence (AI) include variety of applications in cognitive science, robotics & natural interfaces.

Definition: AI is a field of science & technology based on disciplines such as computer science, biology, psychology, linguistics, mathematics and engineering.



* The goal of AI is the development of computer functions normally associated with human physical & mental capabilities such as robots that see, talk, hear, feel & move and software capable of reasoning, learning & problem solving.

Cognitive Science

* This area of AI is based on research in biology, neurology, psychology, mathematics, & many applied disciplines.

* In its application we come across fuzzy logic, neural n/w, genetic algorithm, intelligent agents, expert systems & so on.

Expert system add a Knowledge base & some reasoning capability to information system.

Fuzzy logic systems can process data that are incomplete & ambiguous.

Neural n/w s/w can learn by processing problems & their solutions.

Genetic algorithm uses Darwinian (survival of the fittest), randomizing & mathematical concepts to deal with problems.

Intelligent agents use expert systems & other AI technologies to serve as s/w surroundings.

Robotics

- * AI, engineering & physiology are basic disciplines of robotics.
- * This technology produces robot m/c's with computer intelligence and computer-controlled, humanlike physical capabilities.
- * Visual perception, Locomotion, Navigation, Tactility & Dexterity are some appl^{ns}.

Natural Interfaces

- * Development of natural interfaces is considered as major area of AI application.
- * It is essential to the natural use of computers by humans.
For eg: Natural languages, speech recognition are major thrusts of this area.
- * Development of multisensory devices that use a variety of body movements to operate computers. This is related to emerging application area of virtual reality

Commercial Applications of AI

- ↳ Decision support
- ↳ Information Retrieval
- ↳ Virtual Reality
- ↳ Robotics

NOTE: If a question is asked on this write previously discussed points under respective applications

EXPERT SYSTEMS

* An expert system is a Knowledge-based-information system

Components of an expert system:

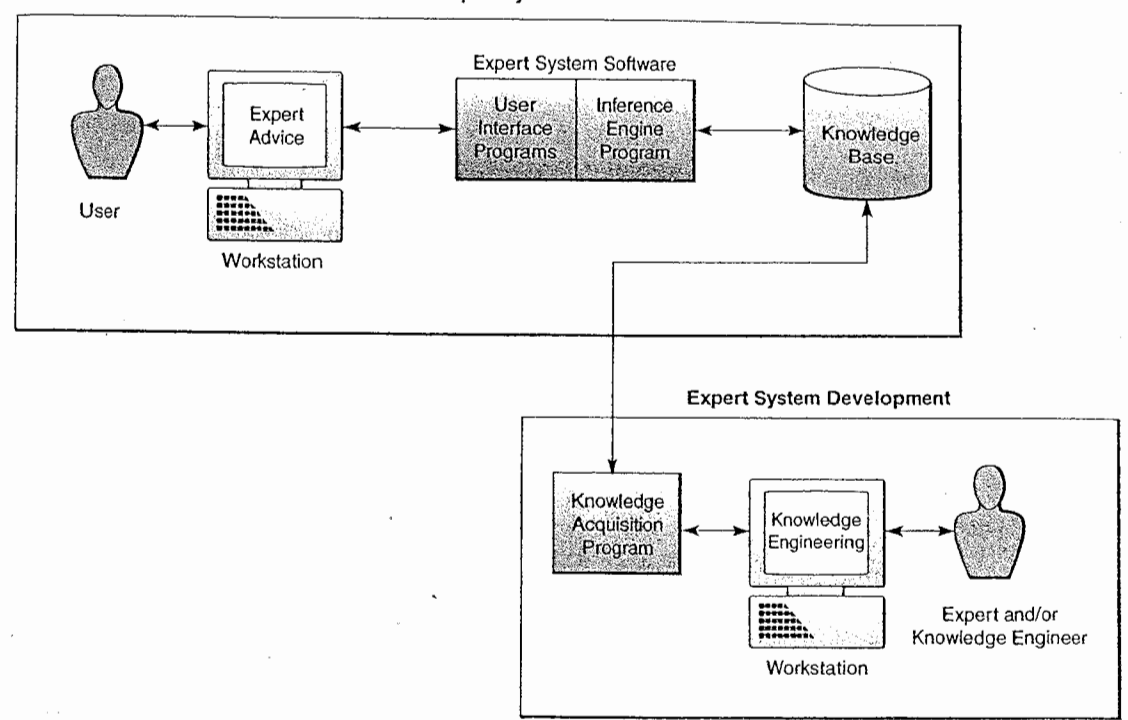
1. Knowledge Base

The Knowledge base of an expert system contains
(a) facts abt specific subject area
(b) heuristic (rules of thumb).

2. Software Resources

The expert system s/w package contains an inference engine & other programs for refining Knowledge & communicating with user.

* Fig below shows components of expert system



Benifits of expert system

- * Expert system is faster & more consistent.
- * It does not get tired or distracted by over-work or stress.
- * Help to preserve & reproduce the knowledge of experts.

Limitation of expert system

- * Limited focus
- * Inability to learn
- * Maintenance problem &
- * Development cost

* The figure below gives an outline of major application categories of expert system.

Application Categories of Expert Systems
<ul style="list-style-type: none">• Decision management—Systems that appraise situations or consider alternatives and make recommendations based on criteria supplied during the discovery process:<ul style="list-style-type: none">Loan portfolio analysisEmployee performance evaluationInsurance underwritingDemographic forecasts
<ul style="list-style-type: none">• Diagnostic/troubleshooting—Systems that infer underlying causes from reported symptoms and history:<ul style="list-style-type: none">Equipment calibrationHelp desk operationsSoftware debuggingMedical diagnosis
<ul style="list-style-type: none">• Design/configuration—Systems that help configure equipment components, given existing constraints:<ul style="list-style-type: none">Computer option installationManufacturability studiesCommunications networksOptimum assembly plan
<ul style="list-style-type: none">• Selection/classification—Systems that help users choose products or processes, often from among large or complex sets of alternatives:<ul style="list-style-type: none">Material selectionDelinquent account identificationInformation classificationSuspect identification
<ul style="list-style-type: none">• Process monitoring/control—Systems that monitor and control procedures or processes:<ul style="list-style-type: none">Machine control (including robotics)Inventory controlProduction monitoringChemical testing



Rakesh.S

VKIT

chapter 1: Security, Ethical & Social challenges of IT

INTRODUCTION

Why to study challenges of IT?

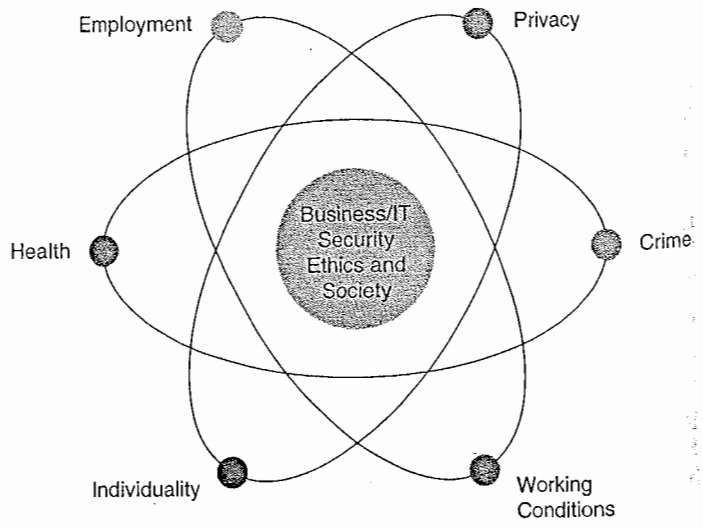
IT in business presents:

- major security challenges
- poses serious ethical questions, &
- affect society in significant ways.

Hence, we study threats to individual & business posed by many types of computer crimes & unethical behaviour.

Business /IT security, ethics & society.

FIGURE 13.1
 Important aspects of the security, ethical, and societal dimensions of the use of information technology in business. Remember that information technologies can support both beneficial and detrimental effects on society in each of the areas shown.



ETHICAL RESPONSIBILITY OF BUSINESS PROFESSIONALS

- * As a business professionals, you have a responsibility to promote ethical uses of information technology in the workplace.
- * There are several ethical foundations in business & IT which are discussed below:

Business Ethics

- * Business Ethics is concerned with the numerous ethical questions that managers must confront as a part of their daily business decision making.
- * Fig below shows some basic categories of ethical business issues.

FIGURE 13.2 Basic categories of ethical business issues. Information technology has caused ethical controversy in the areas of intellectual property rights, customer and employee privacy, security of company information, and workplace safety.

Equity	Rights	Honesty	Exercise of Corporate Power
Executive Salaries	Corporate Due Process	Employee Conflicts of Interest	Product Safety
Comparable Worth	Employee Health	Security of Company Information	Environmental Issues
Product Pricing	Screening		Disinvestment
Intellectual Property Rights	Customer Privacy	Inappropriate Gifts	Corporate Contributions
Noncompetitive Agreements	Employee Privacy	Advertising Content	Social Issues Raised by Religious Organizations
	Sexual Harassment	Government Contract Issues	Plant/Facility Closures and Downsizing
	Affirmative Action	Financial and Cash Management Procedures	Political Action Committees
	Equal Employment Opportunity	Questionable Business Practices in Foreign Countries	Workplace Safety
	Shareholder Interests		
	Employment at Will		
	Whistle-Blowing		

Based on corporate social responsibility theories managers can make ethical decision.

Some corporate social responsibility theories are
 → Stockholders theory.

- * It holds that managers are agents of stockholders' their only ethical responsibility is to increase the profits of business without violating the law or engaging in fraudulent practices.

→ Social Contract theory

- * It states that companies have ethical responsibilities to all members of society, which allows corporations to exist based on a social contract.

→ Stakeholders theory

- * The stakeholders theory of business ethics maintain that managers have an ethical responsibility to manage a firm for the benefit of all its stakeholders,

Technological Ethics

- * It deals with the ethics of the use of any form of technology.
- * There are 4 principles of technological ethics. & they are described in below table.

FIGURE 13.3 Ethical principles to help evaluate the potential harms or risks of the use of new technologies.

Principles of Technology Ethics
<ul style="list-style-type: none"> • Proportionality. The good achieved by the technology must outweigh the harm or risk. Moreover, there must be no alternative that achieves the same or comparable benefits with less harm or risk.
<ul style="list-style-type: none"> • Informed Consent. Those affected by the technology should understand and accept the risks.
<ul style="list-style-type: none"> • Justice. The benefits and burdens of the technology should be distributed fairly. Those who benefit should bear their fair share of the risks, and those who do not benefit should not suffer a significant increase in risk.
<ul style="list-style-type: none"> • Minimized Risk. Even if judged acceptable by the other three guidelines, the technology must be implemented so as to avoid all unnecessary risk.

Ethical guidelines

- * The fig below shows some ethical principles that can serve as the basis for ethical conduct by managers, end users & IS professionals.

P.T.O.

FIGURE 13.4

Part of the AITP standards of professional conduct. This code can serve as a model for ethical conduct by business end users as well as IS professionals.

AITP Standards of Professional Conduct
<p>In recognition of my obligation to my employer I shall:</p> <ul style="list-style-type: none">• Avoid conflicts of interest and ensure that my employer is aware of any potential conflicts.• Protect the privacy and confidentiality of all information entrusted to me.• Not misrepresent or withhold information that is germane to the situation.• Not attempt to use the resources of my employer for personal gain or for any purpose without proper approval.• Not exploit the weakness of a computer system for personal gain or personal satisfaction.
<p>In recognition of my obligation to society I shall:</p> <ul style="list-style-type: none">• Use my skill and knowledge to inform the public in all areas of my expertise.• To the best of my ability, ensure that the products of my work are used in a socially responsible way.• Support, respect, and abide by the appropriate local, state, provincial, and federal laws.• Never misrepresent or withhold information that is germane to a problem or a situation of public concern, nor will I allow any such known information to remain unchallenged.• Not use knowledge of a confidential or personal nature in any unauthorized manner to achieve personal gain.

- * You can be responsible professional by
- (1) acting with integrity.
 - (2) Increasing your professional competence
 - (3) Setting high standards of personal performance
 - (4) Accepting responsibility for your work.
 - (5) Advancing the health, privacy, & general welfare of the public.



COMPUTER CRIME

- * Computer crime is defined by the Association of Information Technology Professionals (AITP) as including.
- (1) The unauthorized use, access, modification, & destruction of h/w, s/w, data or n/w resources.
 - (2) The unauthorized release of infoⁿ.
 - (3) The unauthorized copying of software
 - (4) Denying an end user access to his or her own h/w, s/w, data or n/w resources.
 - (5) Using or conspiring to use computer or n/w resources to illegally obtain infoⁿ or tangible product.

Definitions & Tables

1. HACKING

* Hacking is

→ obsessive use of computers
(or)

→ the unauthorized access & use of networked computer systems.

FIGURE 13.6

Examples of common hacking tactics to assault companies through the Internet and other networks.

Common Hacking Tactics		
Denial of Service This is becoming a common networking prank. By hammering a website's equipment with too many requests for information, an attacker can effectively clog the system, slowing performance or even crashing the site. This method of overloading computers is sometimes used to cover up an attack.	users into passing along critical information like passwords or credit card numbers.	Logic Bombs An instruction in a computer program that triggers a malicious act.
Scans Widespread probes of the Internet to determine types of computers, services, and connections. That way the bad guys can take advantage of weaknesses in a particular make of computer or software program.	Trojan Horse A program that, unknown to the user, contains instructions that exploit a known vulnerability in some software.	Buffer Overflow A technique for crashing or gaining control of a computer by sending too much data to the buffer in a computer's memory.
Sniffer Programs that covertly search individual packets of data as they pass through the Internet, capturing passwords or the entire contents.	Back Doors In case the original entry point has been detected, having a few hidden ways back makes reentry easy—and difficult to detect.	Password Crackers Software that can guess passwords.
Spoofing Faking an e-mail address or Web page to trick	Malicious Applets Tiny programs, sometimes written in the popular Java computer language, that misuse your computer's resources, modify files on the hard disk, send fake e-mail, or steal passwords.	Social Engineering A tactic used to gain access to computer systems by talking unsuspecting company employees out of valuable information such as passwords.
	War Dialing Programs that automatically dial thousands of telephone numbers in search of a way in through a modem connection.	Dumpster Diving Sifting through a company's garbage to find information to help break into their computers. Sometimes the information is used to make a stab at social engineering more credible.

2. CYBER THEFT

* Cyber theft is the the computer crime involving the theft of money.

3. UNAUTHORIZED USE AT WORK

* The unauthorized use of computer systems & n/w's can be called time & resource theft.

* This may range from doing private consulting or personal finances, or playing video games, to unauthorized use of internet...

- * Network monitoring slw, called **sniffers**, is frequently used to monitor n/w traffic to evaluate n/w capacity, as well as reveal evidence of improper use.

FIGURE 13.7
Internet abuses in the workplace.

Internet Abuses	Activity
General e-Mail Abuses	Include spamming, harassments, chain letters, solicitations, spoofing, propagations of viruses/worms, and defamatory statements.
Unauthorized Usage and Access	Sharing of passwords and access into networks without permission.
Copyright Infringement/Plagiarism	Using illegal or pirated software that costs organizations millions of dollars because of copyright infringements. Copying of websites and copyrighted logos.
Newsgroup Postings	Posing of messages on various non-work-related topics from sex to lawn care advice.
Transmission of Confidential Data	Using the Internet to display or transmit trade secrets.
Pornography	Accessing sexually explicit sites from workplace as well as the display, distribution, and surfing of these offensive sites.
Hacking	Hacking of websites, ranging from denial-of-service attacks to accessing organizational databases.
Non-Work-Related Download/Upload	Propagation of software that ties up office bandwidth. Use of programs that allow the transmission of movies, music, and graphical materials.
Leisure Use of the Internet	Loafing around the Internet, which includes shopping, sending e-cards and personal e-mail, gambling online, chatting, game playing, auctioning, stock trading, and doing other personal activities.
Usage of External ISPs	Using an external ISP to connect to the Internet to avoid detection.
Moonlighting	Using office resources such as networks and computers to organize and conduct personal business (side jobs).

4. SOFTWARE PIRACY

- * The unauthorized copying of computer program is referred to as software piracy.
- * Unauthorized copying is illegal because slw is an intellectual property that is protected by copyright law & user licensing agreements.

5. PIRACY OF INTELLECTUAL PROPERTY

- * Unauthorized copying of copyrighted material, such as music, videos, images, articles, books & other written works especially vulnerable to copyright infringement.

6. COMPUTER VIRUSES & WORMS

Virus: A program code that cannot work without being inserted into another program.

Worm: A distinct program that can run unaided

Computer virus or worm can spread destruction among many users. They often destroy the contents of m/m, hard disks & other storage devices. They destroy data & slw of many computer users.

Solⁿ to virus & worms is the use of antivirus.

FIGURE 13.9
Facts about recent computer viruses and worms.

Worm and Virus Facts	
Nimda Worm	<ul style="list-style-type: none"> • It spreads via both network-based e-mail and Web browsers. • It modifies critical system files and registry keys. • It creates a guest account with administrator privileges for hackers to use.
Code Red Worm	<ul style="list-style-type: none"> • It propagated through TCP/IP Web port 80. • It identified itself by defacing English language websites with "Welcome to www.worm.com!—Hacked by Chinese!" • Self-propagation was controlled by means of a "random" IP address generator—that had a bug in it. • After the initial infection and incubation periods, Code Red was programmed to unleash a denial-of-service attack on the Whitehouse.gov website.
Economic Impact	<p>The research firm Computer Economics estimates the Code Red worm cost society about \$2.6 billion in July and August 2001 alone. Add to that \$8.7 billion for the Love Bug, \$1.2 billion for Melissa, \$1 billion for Explorer, and another \$1 billion for Sir Cam. These estimates include approximately equal losses resulting from returning the computer systems to preinfection operating status and lost productivity.</p>

NO USE →

PRIVACY ISSUES

Following are some privacy issues.

- Accessing individuals' private e-mail conversations and computer records, and collecting and sharing information about individuals gained from their visits to Internet websites and newsgroups (violation of privacy).
- Always knowing where a person is, especially as mobile and paging services become more closely associated with people rather than places (computer monitoring).
- Using customer information gained from many sources to market additional business services (computer matching).
- Collecting telephone numbers, e-mail addresses, credit card numbers, and other personal information to build individual customer profiles (unauthorized personal files).

Privacy on the internet

You can protect your privacy in several ways
Eg: sensitive email can be protected by encryption,
Newsgroup postings can be made privately by sending them through anonymous remailers. & so on.

Computer matching: Definition is as follows

- * Using physical profiles (or personal data) & profiling slw to match individuals with data.

Privacy laws:

Definition: Rules that regulate the collection & use of personal data by business.

Computer libel & censorship:

- * The opposite side of the privacy debate are

↳ Freedom of information: Right of ppl to know about matters others may want to keep private.

↳ Freedom of speech: Right of people to express their opinions abt such matters.

↳ Freedom of press: Right of people to publish these opinions.

- * The weapons being used in the battle include

(i) spamming: It is the indiscriminate sending of unsolicited email messages (spam) to many internet users.

(ii) Flamming: sending extremely critical, derogatory & often vulgar email messages or newsgroup postings to other users on the internet or online services.

(iii) libel laws &

(iv) censorship.

OTHER CHALLENGES

Employment challenges

- * Impact of IT on employment is a major ethical concern.
- * IT has created new jobs & increased productivity, while also causing a significant reduction in some types of job opportunities.
- * IT has created new jobs including Internet webmasters, e-commerce directors, systems analysts, and user consultants, have been created to support e-business & e-commerce applications.
- * Thus, jobs have been created by activities that are heavily dependent on information technology, in such areas as space exploration, microelectronic technology & telecommunications.

Computer Monitoring

- * Most explosive ethical issues concerning workplace privacy & the quality of working conditions in business in computer monitoring.
- * Computers are being used to monitor the productivity & behaviour of employees while they work.
- * It increases efficiency & quality of service.
- * Computer monitoring is criticized as unethical because it not only monitors individual's work, but it violates workers privacy & personal freedom.

Working Condition Challenges

- * IT has eliminated monotonous or obnoxious tasks in the office & factory that formerly had to be performed by people.

* Some works in IT are quite repetitive & routine
Challenges to individuality.

* A frequent criticism of IS concerns their negative effects on the individuality of people.

* Computer-based systems are criticized as impersonal systems that dehumanize & depersonalize activities that have been computerized, since they eliminate the human relationships present in noncomputer systems.

* Another aspect of the loss of individuality is the regimentation of the individual that seems to be reqd by some computer-based systems.

HEALTH ISSUES

Use of IT in workplace raise a variety of health issues.

→ Heavy use of computers is repeatedly causing health problems like backpain, job stress etc

→ People who sit at visual display terminals (VDT's) can suffer a variety of health problems known collectively as cumulative trauma disorders (CTD's).

→ Some computer workers may suffer from carpal tunnel syndrome.

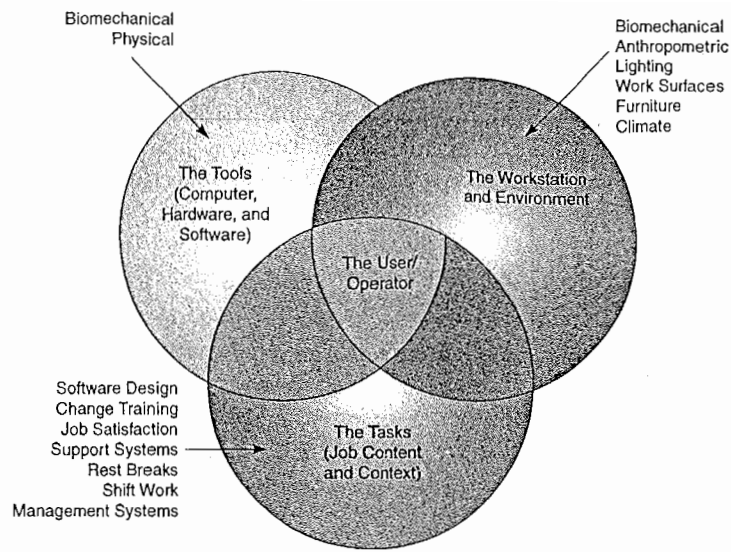
→ CRT's produce an electromagnetic field that may cause harmful radiation of employees who work too close for too long in front of video monitors.

Ergonomics:

Defⁿ: Designing healthy work environments that are safe, comfortable & pleasant for people to work in, thus increasing employee morale & productivity.

FIGURE 13.10

Ergonomic factors in the workplace. Note that good ergonomic design considers tools, tasks, the workstation, and environment.



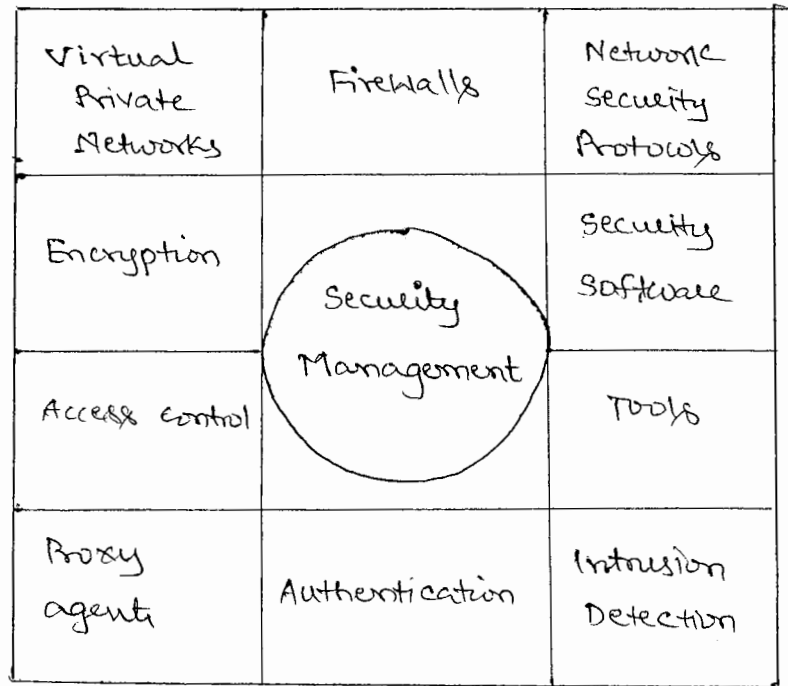
SOCIETAL SOLUTIONS

- * We can use IT to solve human & social problems through societal solutions such as medical diagnosis, computer assisted instruction, governmental program planning, environmental quality control & law enforcement.
- * IT can be used for crime control through various law enforcement applications.

chapter 2: Security Management of IT

INTRODUCTION

- * Aim of security mgmt, is the accuracy, integrity & safety of all IS processes & resources.
- * Fig shows examples of imp't security measures that are part of the security mgmt, of IS.



INTERNETWORKED SECURITY DEFENCES

1. ENCRYPTION

- * Encryption of data has become an imp't way to protect data & other computer r/w resources especially on the Internet, intranets & extranets.
- * Passwords, msgs, files & other data can be transmitted in scrambled form & unscrambled by computer systems for authorized users only.
- * Encryption involves using special mathematical logic algo, or they use a pair of public & private keys, unique to each individual.
- * The top 2 b/w encryption standards are:
 - RSA data security.

2. FIREWALLS

- * A firewall serves as a "gatekeeper" system that protects a company's intranets & other computer n/w's from intrusion by providing a filter & safe transfer point for access to & from the internet & other networks.

3. DENIAL OF SERVICE DEFENCES

*

FIGURE 13.14

How to defend against denial of service attacks.

Defending against Denial of Service	
•	At the zombie machines: Set and enforce security policies. Scan regularly for Trojan Horse programs and vulnerabilities. Close unused ports. Remind users not to open .exe mail attachments.
•	At the ISP: Monitor and block traffic spikes. Filter spoofed IP addresses. Coordinate security with network providers.
•	At the victim's website: Create backup servers and network connections. Limit connections to each server. Install multiple intrusion-detection systems and multiple routers for incoming traffic to reduce choke points.

4. e-mail MONITORING

- * Using content-monitoring sw you can monitor e-mail.

5. VIRUS DEFENSES

- * Use of antivirus are the best solⁿ to this.

OTHER SECURITY MEASURES

1. Security codes.

- ↳ This refers to giving protection using, "password".
- ↳ Encrypting the data plays important role for those appl's which should not be used by hackers.

2. Backup - files.

- ↳ They are duplicate files of data or programs.
- ↳ Files can be protected by file retention measures.

3. Security Monitors.

- ↳ Security of a n/w may be provided by specialized system s/w packages known as system security monitors.

4. Biometric Security.

- ↳ These are the security measures provided by computer devices that measure physical traits that make each individual unique.
- ↳ It is the fast growing area of computer security.

5. Computer - Failure Controls

- ↳ Computer systems fail for several reasons - power failures, electronic circuitry malfunctions, telecommunication n/w problems, hidden programming, virus & worms & so on.

6. Fault - Tolerant Systems.

These are the systems that have redundant processors, peripherals, and s/w that provides.

- Fail-over capability
- Fail-safe capability
- Fail-soft capability.

7. Disaster Recovery.

These are formalized procedures to follow in the event a disaster occurs including

- Which employees will participate
- What their duties will be
- What h/w, s/w, & facilities will be used.
- use of alternative facilities
- offsite storage of an organisation's databases.

SYSTEM CONTROLS & AUDITS

2 final security mgmt requirements that need to be mentioned are:-

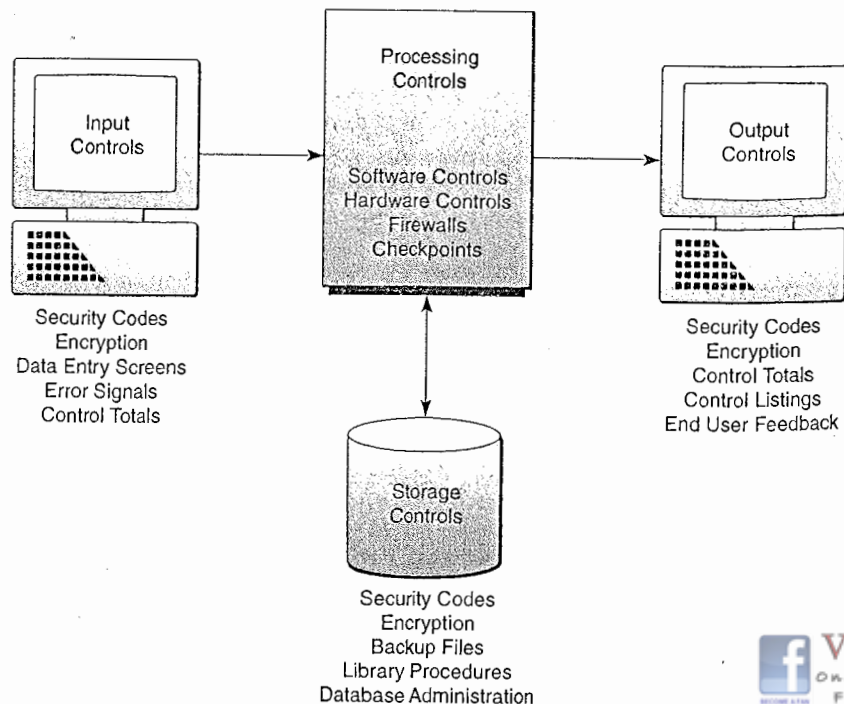
- (i) Development of information system controls,
- (ii) Auditing business systems.

INFORMATION SYSTEM CONTROLS

- ↳ These are the methods & devices that attempt to ensure the accuracy, validity & propriety of IS activities.
- ↳ IS controls must be developed to ensure proper data entry, processing techniques, storage methods, & infoⁿ o/p.

FIGURE 13.18

Examples of information system controls. Note that they are designed to monitor and maintain the quality and security of the input, processing, output, and storage activities of an information system.



Auditing IT Security

- * Important objective to business system audits is testing the integrity of an applⁿ audit trail.
- * An audit trail can be defined as the presence of documentation that allows a transaction to be traced through all stages of its information processing.

Figure 13.19 summarizes ten security management steps you can take to protect your computer system resources from hacking and other forms of cybercrime [13].

FIGURE 13.19

How to protect yourself from cybercrime and other computer security threats.

Security Management for Internet Users	
1. Use antivirus and Firewall software and update it often to keep destructive programs off your computer.	6. Use the most up-to-date version of your Web browser, e-mail software, and other programs.
2. Don't allow online merchants to store your credit card information for future purchases.	7. Send credit card numbers only to secure sites; look for a padlock or key icons at the bottom of the browser.
3. Use a hard-to-guess password that contains a mix of numbers and letters, and change it frequently.	8. Use a security program that gives you control over "cookies" that send information back to websites.
4. Use different passwords for different websites and applications to keep hackers guessing.	9. Install firewall software to screen traffic if you use DSL or a cable modem to connect to the Net.
5. Install all operating system patches and upgrades.	10. Don't open e-mail attachments unless you know the source of the incoming message.



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